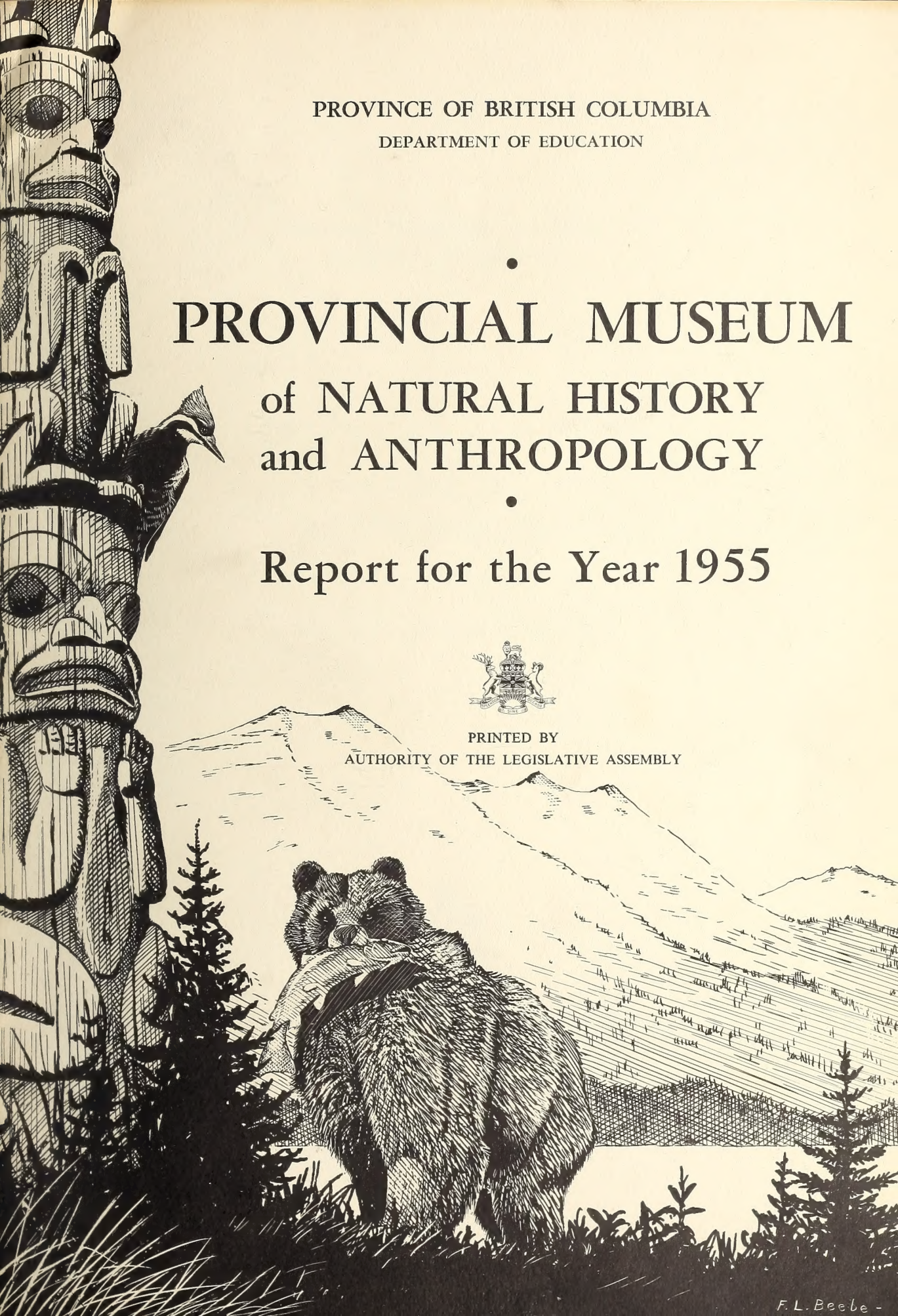
PROVINCE OF BRITISH COLUMBIA

DEPARTMENT OF EDUCATION

PROVINCIAL MUSEUM

of NATURAL HISTORY and ANTHROPOLOGY

Report for the Year 1955



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PROVINCE OF BRITISH COLUMBIA
DEPARTMENT OF EDUCATION

PROVINCIAL MUSEUM
of NATURAL HISTORY and ANTHROPOLOGY

REPORT FOR THE YEAR 1955

VICTORIA, B.C.
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To His Honour FRANK MACKENZIE ROSS, C.M.G., M.C.,
Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR HONOUR:

The undersigned respectfully submits herewith the Annual Report of the Provincial Museum of Natural History and Anthropology for the year 1955.

R. G. WILLISTON,
Minister of Education.

Office of the Minister of Education,
May, 1956.

PROVINCIAL MUSEUM OF NATURAL HISTORY AND ANTHROPOLOGY,
VICTORIA, B.C., May 18th, 1956.

The Honourable R. G. Williston, B.A.,
Minister of Education, Victoria, B.C.

SIR,—The undersigned respectfully submits herewith a report of the activities of the Provincial Museum of Natural History and Anthropology for the calendar year 1955.

I have the honour to be,
Sir,
Your obedient servant,

G. CLIFFORD CARL,
Director.

DEPARTMENT OF EDUCATION

The Honourable R. G. WILLISTON, B.A., *Minister.*
H. L. CAMPBELL, B.A., M.Ed., *Deputy Minister and Superintendent.*

PROVINCIAL MUSEUM OF NATURAL HISTORY AND ANTHROPOLOGY

Staff

G. CLIFFORD CARL, Ph.D., *Director.*
CHARLES J. GUIGUET, M.A., *Biologist.*
WILSON DUFF, M.A., *Anthropologist.*
WILLIAM A. HUBBARD, M.A., *Botanist* (to July 1st).
ADAM F. SZCZAWINSKI, Ph.D., *Botanist* (from July 29th).
FRANK L. BEEBE, *Illustrator and Museum Technician.*
MARGARET CRUMMY, B.A., *Senior Stenographer.*
BETTY C. NEWTON, *Artist.*
SHEILA Y. DAVIES, *Clerk.*
ELEANORE MCGAVIN, *Clerk.*
E. J. MAXWELL, *Attendant.*
GEORGE A. HARDY, *Entomologist* (part time).

Totem-pole Restoration Programme

MUNGO MARTIN, *Chief Carver.*
DAVID MARTIN, *Assistant Carver.*
HENRY HUNT, *Assistant Carver.*

PROVINCIAL MUSEUM OF NATURAL HISTORY AND ANTHROPOLOGY

Objects

(*a*) To secure and preserve specimens illustrating the natural history of the Province.

(*b*) To collect anthropological material relating to the aboriginal races of the Province.

(*c*) To obtain information respecting the natural sciences, relating particularly to the natural history of the Province, and to increase and diffuse knowledge regarding the same.

(Section 4, "Provincial Museum Act," chapter 273, R.S.B.C. 1948.)

Admission

The Provincial Museum is open to the public, free, on week-days, 9 a.m. to 5 p.m., and on Sunday afternoons, 1 p.m. to 5 p.m.

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REPORT OF THE PROVINCIAL MUSEUM

FOR THE YEAR 1955

REPORT OF THE DIRECTOR

SPECIAL EXHIBITS

Two special exhibitions were held during 1955, both in the botanical section. In October and November a display of mushrooms and other fungi was arranged by Dr. Szczawinski featuring models made by Mrs. Lillian Sweeney, formerly of the Provincial Museum staff, and replicas in ceramics made by Mrs. L. O. Madison, of Port Angeles, Wash. Others carved of wood by an unknown Czechoslovakian artist supplement the display. Specimens and photographs were also loaned by the Federal Forest Biology Laboratory in Victoria and the Biology and Botany Department of the University of British Columbia, Vancouver.

In December and continuing into the spring months a collection of illustrations of wild flowers and other native plants was on display, the work of several artists.

A temporary display of Museum publications was set up at John Stubbs School on November 4th and 5th for the Convention of South Vancouver Island Teachers, and a small display of wild-flower paintings was arranged at Victoria College.

A demonstration hive of honeybees, now a regular feature in the summer months, was again installed and cared for by Mr. G. V. Wilkinson, of the Victoria Bee Keepers' Association, to whom we are greatly indebted.

FIELD WORK AND OUT-OF-PROVINCE TRAVEL

Field work was carried out in 1955 as follows:—

May 6th to 19th: Duff visited twelve Kwakiutl villages to make a survey of remaining totem-poles, in company with Dr. Wayne Suttles, of the University of British Columbia. Transportation and expenses were donated by British Columbia Packers Limited.

August 2nd to 13th: Carl and Guiguet made a survey of the Bunsby Island group near the entrance to Ououkinsh Inlet, west coast of Vancouver Island.

September 1st to 3rd: Carl, Duff, Guiguet, and Szczawinski visited South Pender Island to make a preliminary survey.

November 10th to 15th: Guiguet at Tofino to assist in annual survey of water-fowl.

In connection with the Bunsby Island trip we are indebted to the Superintendent, Pacific Naval Laboratory, who arranged for our transportation up the west coast on board the coastal escort "Brockville." We also wish to express gratitude to Mr. A. J. Whitmore, Chief Supervisor of Fisheries, Canada Department of Fisheries, who arranged for our return to Port Alberni on board the fisheries patrol craft "Comox Post," in charge of Captain Montgomery.

In January, G. C. Carl made a lecture tour in the East under the auspices of the National Audubon Society, during which he was able to visit the following institutions: Illinois State Museum (Springfield), Detroit Children's Museum, Cranbrook Institute of Science, National Museum (Ottawa), Nova Scotia Museum of Science (Halifax), Queen's University Museum (Kingston), Trinity College (Port Hope), Royal Ontario Museum and University of Toronto (Toronto), Ontario Agriculture College (Guelph), Chatham-Kent Museum and Dominion Entomological Laboratory (Chatham), Evans-

ville Museum of Arts and Science (Evansville, Ind.), Chicago Natural History Museum and Shedd Aquarium.

In March, C. J. Guiguet attended the North American Wildlife Conference in Montreal as a representative of the Provincial Museum, and while in the East he visited the American Museum of Natural History (New York), the National Museum (Ottawa), the Royal Ontario Museum (Toronto), and the Saskatchewan Provincial Museum (Regina), where he studied display techniques and conferred with fellow biologists.

In November, Wilson Duff attended the American Anthropological Association Convention in Boston and made side-trips to visit the Peabody Museum (Harvard University, Cambridge), American Museum of Natural History (New York), University Museum (Philadelphia), Peabody Museum (Yale University, New Haven), Brooklyn Museum, Brooklyn Children's Museum, National Museum (Ottawa), Royal Ontario Museum (Toronto), Cranbrook Institute (near Detroit), Chicago Natural History Museum, Denver Natural History Museum, Denver Art Museum, Washington State Museum (Seattle).

EDUCATION

Museum Film Programmes

The annual motion-picture programme for school-children of Greater Victoria was given as follows:—

Date	Topic	Attendance
March 5th	"Backyard Exploration"	504
March 12th	"Fishes of the Sea"	435
March 19th	"Birds of the Air"	468
March 26th	"Mammals of the Land"	420
April 2nd	"Adventure in Africa"	426

We are indebted again to the Audio-Visual Education Branch of the Greater Victoria School Board for distributing the free tickets to the various schools, and to the British Columbia Electric Company for granting special travel privileges to school-children attending the lectures.

A similar series of films was presented to the general public on Sunday afternoons during the above period. More than 1,600 persons attended the five programmes. We are grateful to the British Columbia Electric Company and to the Imperial Oil Limited for loan of certain films used on these programmes.

Other Lectures

During 1955 the Director gave lectures and film shows to the following groups: Canadian Institute of Forestry; Craigflower Women's Institute; Xi Beta Chapter, Beta Sigma Phi; Fly-tying Class, Victoria Night School; Newman Alumni; Victoria Dental Nurses' Association; Victoria Outdoor Club; Comox Elementary School; Comox P.-T.A.; Courtenay High School; Qualicum Elementary School; Yount P.-T.A. (Youbou); Victoria Electric Club (two lectures); Biology Club, University of British Columbia (Vancouver); University Extension Society; First Baptist Church Couples' Club; Sir James Douglas P.-T.A.; St. John Ambulance Brigade; Victoria Welsh Society; Victoria North Kiwanis (two lectures); Lake Cowichan Kiwanis; St. Andrew's Young Couples' Club; St. Andrew's Men's Club (two lectures); Brentwood Chamber of Commerce; View Royal Community Club; Women's Canadian Club (Victoria); Victoria Aquarium Society; Victoria Bee Keepers' Association (two lectures); George Jay Home and School Association; Order of the Eastern Star; Victoria Summer School; Windsor Park Play Group; Willows Park Play Group; Women's Canadian Club Council; Victoria Revellers; Esquimalt Lions Club; Camosun Gyro Club; B.C. Retired Civil Servants'

Association; Elementary School Teachers' Convention; St. Aiden's Men's Club; American Institute of Mining Engineers; Saltspring P.-T.A.; Metropolitan Church Men's Club (ladies' night); Margaret Jenkins School; Qualicum-Parksville Canadian Club; Qualicum School; Vancouver Island Nurserymen's Association; Oak Bay Kiwanis; and the general public in the Museum.

In addition to these, the Director gave a series of popular lectures under the sponsorship of the National Audubon Society in more than thirty cities in Eastern United States and Canada in January and February. Forty-two programmes were presented to more than 21,000 persons.

A series of "Technical Talks" which was started in 1954 was continued, as follows:—

January 14th: The Canadian Corps in Normandy, 1944, Reginald Roy.
February 11th: Glaciation and Post-Glacial Changes in B.C., Hugh Nasmith.
March 11th: Ecological Investigations in B.C.'s Coastal Forests, Ralph Schmidt.
April 15th: The Structure of the Mountain Ranges of B.C., Dr. A. Sutherland-Brown.

In the field of radio various members of the technical staff have contributed to several programmes. Mr. Guiguet has continued his series of five-minute talks three times a week, and Dr. Carl appeared regularly on a weekly panel called "Outdoors with the Experts," commencing in May. The Director also presented a programme in the series "Fur and Feather" over CBUT (television) in November.

Other lectures were given by staff members mentioned in the following sections.

A group of junior naturalists, sponsored by the Victoria Natural History Society, has continued to meet weekly at the Museum under the direction of Miss Betty Newton, of the Museum staff. A lecture, demonstration, work project, or outing was arranged for each meeting; we are indebted to the various persons who contributed to the programme.

In addition to supervising the junior naturalist meetings during the year, Miss Newton has continued to prepare sets of Indian dioramas, which are made available to the schools of the Province through the Division of Visual Education, and contributed material to botanical exhibits arranged by Dr. Szczawinski.

PUBLICATIONS

The following publications originated from the Museum during 1955:—

By G. Clifford Carl—

"The Green Turtle in British Columbia." Report of the Provincial Museum for 1954, pp. 77–78.

"Puzzles in Population." Wildlife Review, Vol. 1, No. 3, pp. 10–11. (Reprinted in Vancouver Province magazine.)

"Errant Earwigs." Victoria Naturalist, Vol. 12, No. 5, pp. 49–53.

"Northward Extension of Known Range of the Tailed Frog, *Ascaphus truei* Stejneger." Herpetologica, Vol. II, No. 3, p. 202.

By C. J. Guiguet—

"A Record of Baird's Dolphin (*Delphinus bairdii* Dall) in British Columbia." Canadian Field-Naturalist, Vol. 68, No. 3, p. 136.

"Undescribed Mammals (*Peromyscus* and *Microtus*) from the Islands of British Columbia." Report of the Provincial Museum for 1954, pp. 65–76.

By C. J. Guiguet, illustrated by F. L. Beebe—

"The Birds of British Columbia: (3) The Shorebirds." B.C. Provincial Museum Handbook No. 8, pp. 1–54.

"The Birds of British Columbia: (4) Upland Game Birds." B.C. Provincial Museum Handbook No. 10, pp. 1–47.

By G. A. Hardy—

"A Woodland Pond." Victoria Naturalist, Vol. 12, No. 3, pp. 25–28.

"The Natural History of the Forbidden Plateau Area, Vancouver Island, British Columbia." Report of the Provincial Museum for 1954, pp. 24–63.

By William A. Hubbard—

"The Grasses of British Columbia." B.C. Provincial Museum Handbook No. 9, pp. 1–204.

Mr. Guiguet and Mr. Beebe this year prepared an additional fifty-two illustrated bird papers, some of which have appeared weekly in the Victoria Daily Colonist.

The manuscript and illustrations for "The Mammals of British Columbia" were completed, and the material was in the hands of the Queen's Printer by the end of the year.

Besides the weekly bird illustrations and the mammals illustrations mentioned above, Mr. Beebe completed the illustrations for "The Grasses of British Columbia" and began a series of drawings to be used in a handbook to the bivalve molluscs, which is in preparation. He also assembled material for a travelling-case featuring the food of the robin, to be used in the schools of the Greater Vancouver district.

MOTION PICTURES

A few hundred feet of movie film were taken both of anthropological material and wildlife as the opportunity arose. Footage obtained largely on the Bunsby Islands has been organized into a short lecture film entitled "Island Exploration." Other material has been filed for future use.

ATTENDANCE

The number of visitors to the Museum during 1955 is summarized as follows:—

	Registered	Estimated
January	938	1,254
February	1,221	1,628
March	1,001	4,424
April	2,955	4,742
May	2,760	3,680
June	5,848	7,797
July	10,806	14,480
August	11,415	15,220
September	4,940	6,586
October	1,705	2,273
November	697	929
December	589	785
Totals	44,875	63,798

The 2,253 children who attended the Saturday morning film programmes and the 1,639 persons who attended the Sunday afternoon programmes in March and April have been included in the above numbers. In addition, twenty classes totalling approximately 1,000 students visited the Museum during the year, bringing the estimated total to about 65,000.

The attendance record for the month of July has been broken down by Mr. Maxwell as follows:—

Residence	Registration	Residence	Registration
British Columbia	2,016	Washington	1,735
Alberta	584	Oregon	907
Saskatchewan	316	California	2,177
Manitoba	216	Other States	2,021
Ontario	513	Alaska	6
Quebec	129	Great Britain	92
New Brunswick	8	Other countries	58
Nova Scotia	20		
Prince Edward Island	7	Total	6,996
Newfoundland	1	Grand total	10,806
Total	3,810		

The sum of $321.66 collected by the Solarium donation-box during the year was turned over to the Queen Alexandra Fund for Crippled Children.

BUILDING ALTERATIONS

After many long delays the Museum wing was completely rewired, new fluorescent fixtures were installed, and many new outlets were provided. With the greatly improved electric services, greater loads can now be accommodated, and with the new and brighter lighting, specimens and labels can finally be viewed with relatively little eye-strain.

The additional outlets will now make it possible to install newly designed cases equipped with indirect and controlled lighting. Some of these units have already been constructed for the display of small mammals on the main floor, and several more series are planned for the Indian exhibition rooms in the basement.

STAFF CHANGES

One major change in staff occurred with the resignation of Mr. William Hubbard, botanist, who had joined the staff in September, 1953. Although he was with us a relatively short time, Mr. Hubbard accomplished a great deal; not only did he carry on the normal routine herbarium duties, but he also designed and assembled a new set of plant-storage cases to house the expanding collection and completed the manuscript for "The Grasses of British Columbia," which was published in the Handbook Series in 1955. We wish him well in his new post at Kamloops.

To take over the duties of botanist, Dr. Adam F. Szczawinski joined the Museum staff in July. Dr. Szczawinski brings with him a wealth of experience, based on an intensive training in botanical fields both in Poland and, since the war, in Canada at the University of British Columbia. A specialist in lichens and mosses, he has also a broad knowledge in all groups of plants and considerable ability in the planning and arrangement of displays. We welcome him as a fellow member.

OBITUARIES

We regretfully record here the passing of several persons who have rendered many services to the Museum in the past.

Mr. E. A. Cooke, who was associated with the Museum in several capacities for over twenty-five years, retiring in 1942 (June 11th in Victoria).

Mr. A. A. Sherman, formerly of the Federal Department of Fisheries in the Cowichan district, who provided transportation on many occasions, collected specimens, and maintained an unfailing interest in Museum activities (October 1st in Duncan).

Mr. Stanley G. Jewett, a leading bird authority in the Pacific Northwest and co-author of "Birds of Washington" (October 12th in Portland, Ore.).

Mrs. Martha Flahaut, editor of the "Murrelet" for many years and compiler of bird migration data for the National Audubon Society (December 31st in Spokane, Wash.).

REPORT OF THE BOTANIST

To July 1st

The first half of the year saw the completion of Handbook No. 9, "Grasses of British Columbia." This handbook was an attempt to list and describe all of the known grasses of British Columbia. Many omissions probably occur due to the lack of material from Northern British Columbia. However, it is hoped that the handbook will provide stimulus for the collection and study of these oft-neglected plants. The excellent black and white illustrations, done by Mr. Frank Beebe, the Museum illustrator, are of great value in helping the beginner identify grasses in which he is interested.

The wild-flower case was used during the winter months to show native trees. Sections showing the wood and bark were used, as well as branches of the foliage. This was replaced by the seasonal-flower exhibit as soon as the first spring flowers were available.

Ten more herbarium cases were prefabricated and assembled. The old cases were then discarded and the office of the herbarium rearranged to make better use of the limited floor area. In all there are now eighteen new cases, which should be capable of holding 40,000 herbarium mounts. The accession numbers are now at 25,000, so room is now available for more collections from the north and elevations above 6,000 feet.

Other duties of the botanist have included the identification of innumerable plants and extension work.

Work was also started on a possible handbook, "Poisonous Plants of British Columbia."

From August 1st

CHANGING EXHIBITS

A major effort was made to present changing exhibits of special note. "Fungi, with emphasis on mushrooms, commonly seen in the Pacific Northwest" was the first attempt made by the Museum in recent years to devote a major exhibit to a phase of botany of particular importance to British Columbia. The exhibit attempted to explain some of the basic facts abount fungi and to show also their importance in the economy of the Province. The educational value of this kind of display was stressed in order to present knowledge for the layman in easily understandable form. A special feature was a section illustrating the fact that a good many fungi are our "friends" while others are our "enemies." The exhibit also covered diseases caused by fungi and the results of modern research in the field of mycology.

It was the first exhibit of its kind in British Columbia, and we were very fortunate in receiving much of the material by courtesy of:—

The Dominion Forest Pathology Laboratory, Victoria: Display of forest diseases, illustrated by actual specimens and a number of photographs.

The University of British Columbia (Department of Biology and Botany): A collection of mushroom models carved in wood, brought to Canada from Czechoslovakia by Mr. Leon Koerner and donated to the University of British Columbia.

Mrs. L. O. Madison, Port Angeles, Wash.: A large collection of mushrooms modelled in clay and ceramic, representing the species of Washington State. It should be added that this unusual and valuable collection of seventy-five different species was on display for the first time.

Mrs. L. Sweeney: A collection consisting of mushrooms modelled in wax and wood, representing the Victoria district.

The late W. B. Anderson, F. L. Beebe, and Miss B. Newton, presently artists at the Provincial Museum, whose paintings and field sketches were on display.

In addition to these, a valuable and unique miscellaneous collection of diagrams and graphs gave a complete picture of this interesting group of plants.

The Museum is indebted to the T. Eaton Company Limited, Victoria, for their help in advertising the display and for giving six display windows in their store.

(Photo by G. C. Carl.)

Special exhibit of fungi of British Columbia, Provincial Museum, fall of 1955.

The display was viewed by a good many people and received favourable and encouraging comments.

" British Columbia flora in drawings and paintings " was the second changing exhibit. This unique display, representing British Columbia flora of the past sixty-five years, was opened in December.

About 170 originals were carefully chosen from more than 500 collected to represent the best work of British Columbia artists and others ranging back to 1890. The work of twelve artists was on display, showing the various techniques:—

I. Abercrombie, Vancouver, B.C. (1920–30): A series in water-colour and pen and ink. British Columbia Coniferæ, Liliaceæ, and Orchidaceæ.

F. L. Beebe, Provincial Museum, Victoria, B.C. (1950–54): A series in etchings and tempera, British Columbia Gramineæ.

T. C. Brayshaw, Hope, B.C. (1953–55): A series in pen and ink.

M. Bryant, Vancouver, B.C. (1953–55): A series in pen and ink representing the ferns of British Columbia. These constitute some of the illustrations in the forthcoming handbook "Ferns of British Columbia," by T. M. C. Taylor.

M. Heathfield, Victoria, B.C. (1890): A series in water-colour on flora of Victoria in 1890. This collection is probably one of the first paintings of British Columbia flora.

G. Kuthan, Vancouver, B.C. (1952–55): A series of lino-cuts representing the flora of Revelstoke National Park.

C. P. Lyons, Victoria, B.C. (1955): A series of pen and ink representing British Columbia trees and shrubs. Illustrations were originals from his "Trees, Shrubs, and Flowers to Know in British Columbia."

W. A. MacDonald, Vancouver, B.C. (1955): A series of pen and ink on evergreens of British Columbia.

B. Newton, Victoria, B.C. (1953–55): A series of water-colour representing spring flora.

S. Stoker, Duncan, B.C. (1920–25): A series of water-colour representing flora of Cowichan Lake district.

L. Sweeney, Victoria, B.C.: Oil painting of flowering dogwood.

G. Weber, Edmonton, Alta (1941–55): Flora of British Columbia in silk-screen, air-brush, and water-colour.

Acknowledgment is due to Dr. T. M. C. Taylor, Department of Biology and Botany, University of British Columbia, for the loan of I. Abercrombie's and M. Bryant's originals.

The preparation and arrangement of the displays was carried out with most efficient help of Mrs. S. Davies, of the Museum staff.

VOLUNTEERS

It would have been impossible for the Botanical Section to accomplish the work of changing exhibits in 1955 without the help of volunteers. The only recompense these persons received was the satisfaction derived from the work itself and the knowledge of their contribution to the Museum's progress. Space does not permit a more extended statement of the volunteers' contribution, but, nevertheless, the following really merit mention for the enthusiasm which they showed in their work:—

Display of fungi: Mrs. L. O. Madison, Port Angeles, Wash.; Mrs. Carl Ericson, Woodinville, Wash.; and Dr. W. G. Ziller, Victoria, B.C.

British Columbia flora display: Dr. T. C. Brayshaw, Hope, B.C.

Lichens: Miss M. C. Melburn, Victoria, B.C.

It is with a feeling of appreciation and humility that I record the Museum's debt to our volunteer helpers.

HERBARIUM

Recorded accessions for the year 1955 amount to 250 sheets of specimens, bringing the total to 24,870. A second lot of storage-cases was obtained, increasing the total number to eighteen. In this regard it was necessary to reorganize the entire Herbarium, arranging the families of plants in alphabetical order. This change will speed up the procedure and make it easier for those who are unfamiliar with taxonomy to use the Herbarium. A great amount of time was spent on checking, mounting and labelling material collected in previous years. It is planned to obtain the help of two students next summer to carry on with this work.

Among the accessions in 1955 there are three collections of special value:—

(1) W. A. Weber: A collection of British Columbia flora in 1954. It is a large collection, 100 sheets of which became accessions in 1955; those remaining are to be completed in 1956.

(2) D. Faris, Jr.: A collection comprising eighty-two sheets of British Columbia flora from the Fraser River valley, 1954.
(3) J. E. Underhill: A collection comprising thirty-two sheets of British Columbia flora from Cadwallader Range (Lillooet District), 1954.

Duplicate material both from submitted collections and from Museum collections was sent to the University of British Columbia on an exchange basis. Exchange of duplicates was also established with the Science Service in Ottawa. The Herbarium has a big demand for flora of Vancouver Island, and it is hoped that in years to come more extensive collecting can be done.

Technical work in the Herbarium was efficiently attended to by Mrs. S. Davies.

OTHER ACTIVITIES

The exhibit of native plants was maintained as usual. This year an effort was made also to illustrate the plants by drawings and paintings, in order to show the plants in various stages of their development. These drawings and paintings were done by Museum artists F. L. Beebe and Miss B. Newton.

Other duties of the Botanist were the identification of many collections of plants and of miscellaneous plants sent in or brought in by the general public and by members of other departments. The service of the Botanist was widely used by Wildlife Officers, Rangers, and Foresters in the Province, many of whom carry out research studies requiring positive identification of plants.

A series of lectures was given to various organizations and groups in Victoria, as, for example, Boy Scout groups, Rover Scouts and Scout Leaders, Parent-Teacher Associations, botany class of Victoria College, and the Natural History Society.

FIELD WORK

In the beginning of September, 1955, two days' field-trip was undertaken to South Pender Island, east of south end of North Pender Island, Cowichan District, 48° latitude, 123° longitude. The island is located in the Strait of Georgia between Saltspring Island (to the west) and Saturna Island (to the east).

Although botanical collections and field-notes were made whenever and wherever time and opportunity permitted, the collecting of plants was purely incidental. During this time, spring and early summer flora, particularly Gramineæ and Cyperaceæ, had already passed or were in a stage unsuitable for collecting. It is intended to make a few other trips in the future to complete the collection. A great many species remain to be collected before the flora of South Pender Island may be said to be even tolerably covered. The plants collected are listed below.

During October and the beginning of November several trips were made in the vicinity of Victoria, Sooke, and Jordan River to collect fungi for a display and for the purpose of making a survey of local mushrooms, as this has been of considerable interest to the public. One longer trip was made to Mount Arrowsmith, Cameron Lake, MacMillan Park, and Cowichan Lake, also to collect fungi. The Botanist was accompanied on this trip by Dr. W. Ziller, mycologist, Canada Forest Pathology Laboratory in Victoria. Some time in the future the Botanist hopes to prepare, in collaboration with Dr. Ziller, a list of common edible and poisonous mushrooms on Vancouver Island.

Plants from South Pender Island, 1955

Lichens

Candelariella vitellina (Ehrh.) Mull.
Cetraria glauca (L.) Ach.
Cetraria scuttata (Wulf.) Poetsch.
Cladonia bellidiflora (Ach.) Schær.

Cladonia chlorophæa (Flk.) Spreng.
Cladonia coccifera (L.) Willd.
Cladonia fimbriata (L.) Fries.
Cladonia furcata (Huds.) Schrad.
Cladonia gracilis (L.) Willd.
Cladonia macilenta Hoffm.
Cladonia mitis Sandst.
Cladonia pyxidata (L.) Hoffm.
Cladonia sylvatica (L.) Hoffm.
Cladonia uncialis (L.) Web.
Lecanora subfusca (L.) Ach.
Mycoblastus sanguinarius (L.) Norm.
Nephromopsis ciliaris (Ach.) Hue.
Ochrolechia upsaliensis (L.) Mass.
Parmelia conspersa (Ehrh.) Ach.
Parmelia physodes (L.) Ach.
Parmelia saxatilis (L.) Ach.
Parmelia sulcata Taylor.
Peltigera aphthosa (L.) Willd.
Peltigera canima (L.) Willd.
Peltigera canima f. *membranacea* (Ach.) Duby.
Pertusaria sp.
Ramalina farinacea (L.) Ach.
Ramalina reticulata (Noedh.) Krumphbr.
Sphærophorus globosus (Huds.) Wainio.
Stereocaulon tomentosum Fries.
Usnea hirta (L.) Wigg.
Usnea plicata (L.) Wigg.
Verrucaria maura Wahl.
Xanthoria polycarpa (Hoffm.) Oliv.

Mosses

Dicranum fuscescens Turn.
Hylocomium splendens (Hedw.) Bry.
Mnium menziesii (Hook.) C.M.
Mnium punctatum Hedw.
Plagiothecium undulatum (Hedw.) Bry.
Polytrichum commune Hedw.
Polytrichum juniperinum Hedw.
Pseudisothecium stoloniferum (Hook.) Grout.
Rhacomitrium canescens Brid.
Rhytidiadelphus triquetrus (Hedw.) Warnst.

Liverworts

Conocephalum conicum (L.) Dum.
Frullania nisquallensis Sull.
Lepidozia reptans (L.) Dum.
Lunularia cruciata (L.) Dum.
Marchantia polymorpha L.
Scapania bolanderi Aust.

Ferns

Dryopteris austriaca (Jacq.) Woynar=*D. dilatata* (Hoffm.) A. Gray.
Polypodium vulgare L.
Polystichum munitum (Kaulf.) Presl.

CLUB MOSSES

Selaginella Wallacei Hieron.

ACERACEÆ

Acer macrophyllum Pursh.

BERBERIDACEÆ

Mahonia nervosa (Pursh.) Nutt.

BETULACEÆ

Alnus rubra Bong.

BORAGINACEÆ

Myosotis laxa Lehm.

CAPRIFOLIACEÆ

Lonicera hispidula Dougl.
Symphoricarpos albus (L.) Blake.

CARYOPHYLLACEÆ

Arenaria serpyllifolia L.
Cerastium arvense L. var. *angustifolium* Hollick.
Spergularia marina (L.) Griseb.
Spergularia rubra (L.) J. & C. Presl.

CELASTRACEÆ

Pachystima myrsimites (Pursh.) Raf.

CHENOPODIACEÆ

Chenopodium album L.
Salicornia pacifica Standl.

COMPOSITÆ

Bellis perennis L.
Eriophyllum lanatum (Pursh.) Forbes.
Gnaphalium purpureum L.
Grindelia stricta DC.
Hypochæris radicata L.
Madia dissitiflora (Nutt.) T. & G.
Madia madioides (Nutt.) Greene.

CONVOLVULACEÆ

Cuscuta salina Engelm. var. *major* Yunck. on *Salicornia pacifica.*

CRASSULACEÆ

Sedum spathulifolium Hook.

CRUCIFERÆ

Cakile edentula (Bigel.) Hook. var. *californica* (Hel.) Fern.
Lepidium virginicum L. var. *medium* (Greene) C. L. Hitch.

CYPERACEÆ

Eleocharis palustris (L.) R. & S.

ERICACEÆ

Gaultheria shallon Pursh.
Monotropa uniflora L.

FAGACEÆ

Quercus garryana Dougl.

GERANIACEÆ

Erodium circutarium (L.) L'Her.
Geranium mole L.

GRAMINEÆ

Agropyron trachycaulum (Link.) Malte.
Distichlis spicata (L.) Greene.
Elymus mollis Trin.
Festuca rubra L.
Glyceria grandis S. Wats.
Poa compressa L.
Puccinellia distans (L.) Parl.

JUNCACEÆ

Juncus acuminatus Michx.
Juncus articulatus L.
Juncus balticus Willd. var. *littoralis* Engelm.
Juncus bufonius L.
Luzula campestris (L.) DC. var. *comosa* (E. Mey.) Fern. & Weig.

JUNCAGINACEÆ

Triglochin maritima L.

LABIATÆ

Marrubium vulgare L.
Mentha arvensis L. var. *canadensis* (L.) Brig.
Satureja douglasii (Benth.) Brig.

LEGUMINOSÆ

Trifolium procumbens L.
Vicia gigantea Hook.

LEMNACEÆ

Lemna minor L.

LILIACEÆ

Allium cernum Roth.

NYMPHEACEÆ

Nymphozanthus polysepalus (Engelm.) Fern.

ONAGRACEÆ

Epilobium angustifolium L.
Epilobium glandulosum Lehm. var. *cinerascens* (Piper) Peck.
Epilobium glandulosum Lehm. var. *perplexans* Trel.
Godetia amœna (Lehm.) G. Don.

ORCHIDACEÆ

Goodyera oblongifolia Raf.
Habenaria sp.

OROBANCHACEÆ

Orobanche grayana Beck. var. *nelsonii* Munz.

PINACEÆ

Abies grandis Lindl.
Pseudotsuga menziesii (Mirle.) Franco.

PLANTAGINACEÆ

Plantago juncoides Lam.

POLYGONACEÆ

Polygonum natans (Michx.) Eat.=*P. amphibium* L.
Polygonum spergulariæforme Meisn.

RANUNCULACEÆ

Ranunculus repens L.

ROSACEÆ

Fragaria bracteata Hel.
Holodiscus discolor (Pursh.) Maxim.
Potentilla anserina L.
Prunus demissa (Nutt.) D. Dietr.
Rosa gymnocarpa Nutt.
Rubus spectabilis Pursh.
Spiræa douglasii Hook.

RUBIACEÆ

Galium trifidum L. var. *pacificum* Wieg.
Galium triflorum Michx.
Sherardia arvensis L.

SALICACEÆ

Salix hookeriana Benth.
Salix sitchensis Sans.

SCROPHULARIACEÆ

Digitalis purpurea L.
Mimulus moschatus Dougl.

SOLANACEÆ

Solanum nigrum L.

TAXACEÆ

Taxus brevifolia Nutt.

TYPHACEÆ

Typha latifolia L.

UMBELLIFERÆ

Ligusticum canbryi C. & R.
Lomatium nudicaule (Pursh.) C. & R.

REPORT OF THE BIOLOGIST

Field work in 1955 included small mammal and avian investigations on the Bunsby Island group off the west coast of Vancouver Island, the results of which appear elsewhere in this Report.

The short expedition made annually to observe wintering shorebirds and waterfowl at Tofino Inlet was made this year in November. Due to intense cold and freezing conditions, a definite lack of shorebirds was observed. Waterfowl, however, were present in the usual large numbers, but due to the inclement weather conditions little census work was accomplished.

No critical field work was necessary or carried out this year on *Peromyscus,* introduced by the Provincial Museum to islands in Oak Bay. Visual examination revealed that populations established in previous years are still present, and that Norway rats have

recently become established on Discovery, front Chatham, and Vantreight Islands. On the control island, where several pairs of mice have been released, the population was extremely high during the late summer, fall, and winter months of 1955; series are to be collected next year. Local investigations, to which one day per week is usually allocated, were greatly curtailed again this year, as were other field investigations. This was due primarily to the pressure of other commitments, including the completing of a major publication, which necessitated constant travel to the University at Vancouver.

An additional fifty illustrated papers on British Columbia birds were prepared for the handbook series by Mr. Frank Beebe and the Biologist this year. This brings a total of 130 papers so far prepared for this project. Three handbooks have been published from the material at hand, two of which were completed this year (*see* Director's report). Material for an additional four or five handbooks is in the state of rough draft.

The outdoor broadcasts initiated last year at radio station CKDA in Victoria were continued this year. One hundred and fifty five-minute programmes were produced featuring natural history in general. Life-histories of birds, mammals, and fishes were featured, as well as hunting and fishing reports. Guest speakers again this year included Dr. I. McTaggart Cowan, Dr. G. Clifford Carl, Dr. David B. Turner, Dr. James Hatter, Dominion Wildlife Research Officer R. H. Mackay, Game Biologists Patrick Martin and Don Robinson, Museum technician Frank Beebe, Mr. Dave Gray, and several other specialists in the field of outdoor sports.

Routine curatorial activities dealing with nearly 16,000 scientific study skins of birds and mammals, specimen preparation, preparation and rearrangement of exhibits, cataloguing and indexing of material, specimen identification, lecturing, research, writing (*see* Director's report), and the host of minor activities associated with museum work, combined with the field activities, completely utilized the Biologist's time during the year 1955.

One hundred and fifty-six specimens from the scientific study collections of birds, mammals, amphibians, and plants went out on loan to the following institutions in the current year: Universities of Georgia, Kansas, and British Columbia; Oregon State College, Corvallis; Geological Survey of Canada, Ottawa; and South Vancouver Island Rangers, Victoria.

We wish to acknowledge the continued voluntary co-operation of the many citizens of this Province who contribute annually to our biological collections and knowledge, especially members of the Canada Fisheries Department—Mr. A. J. Whitmore, Mr. H. E. Palmer, and Captain C. W. Earnshaw and the crew of the "Howay"; members of the Game Commission—Commissioner Frank R. Butler, Inspector George Stevenson, Game Warden R. Sinclair, Mr. Don Kiers, and Game Warden W. Webb; Mr. Bruce Irving, of Pender Island; Messrs. George Hillier and Vince Maden, of Ucluelet; Mr. Bert Robson, of Atnarko; Mr. Len Newbigging, of Victoria; Mr. Don Robinson, of the British Columbia Game Commission at Nanaimo; Game Warden Charles Estlin, of Courtenay; Mr. R. H. Mackay, of the Canadian Wildlife Service; Mr. Gordon Pike, of the Pacific Biological Station, Nanaimo; and many others whom we may have failed to mention here.

REPORT OF THE ENTOMOLOGIST

As the Entomologist is on duty only four days per month, little opportunity for projects other than routine work is available. Nevertheless, after the collection and identification of specimens have received attention, there is still time left for a certain amount of original investigations.

ROUTINE ACTIVITIES

1. First and foremost, the extensive collections are inspected and fumigated usually twice a year, though a constant watch is kept for possible predators.

2. Answering inquiries and naming specimens take up a portion of the time, often entailing extensive research in order to obtain the information required. In the past year, such activities have included the naming of butterflies, moths, beetles, flies, and spiders either from an economic aspect or for the practical use of the inquirer.

3. Requests by specialists are occasionally received for material to be studied for the purpose of reviews and monographs. Among these have been large collections of beetles, a group of flies, and other specific families of genera of insects that may be in the Museum collection.

SPECIAL ACTIVITIES

The reorganization of the Provincial insect collection is under way, in that with the acquisition of cabinets with glass-topped drawers it is now possible to bring the various collections of each order of insects into one unit, thus making them more easily accessible for convenient study.

So far accomplished in this regard is a twelve-drawer cabinet containing nearly all the dragon-flies of British Columbia. Other similar cabinets contain an extensive series of the long-horned beetles of British Columbia, the flat-headed borers (Buprestidæ), the butterflies of British Columbia, and now the moths are in process of arrangement, the completion of which will be accomplished when more cabinet room is available.

RESEARCH

Part of the Entomologist's time has been given to the preparation of the recently published edition of " The Natural History of the Forbidden Plateau," and at present a similar work on the Lost Lake area near Victoria is under way. This will include material relating to plants, birds, mammals, fish, and insects of the area studied.

As a special study, the Entomologist is engaged in inquiring into the life-histories of the macro-lepidoptera, particularly those of his own immediate neighbourhood and those species about which little or nothing seems to be known of their early stages.

Some success has already been achieved, some of the results of which have been published in the Proceedings of the Entomological Society of British Columbia. Also a start has been made on an illustrated handbook on the butterflies of British Columbia.

EXHIBITIONS

A table case has been prepared to illustrate the scorpion, the tarantula, and the banana spider, objects of much public interest. These specimens have been nicely arranged by Miss Betty Newton, artist on the Museum staff.

REPORT OF THE ANTHROPOLOGIST

ACTIVITIES

The Anthropologist spent the period from May 6th to 19th on a survey of southern Kwakiutl villages to determine the number of totem-poles and old-style house frameworks that still remain in salvable condition. The trip was made in the company of Dr. Wayne Suttles and Dr. Helen Codere, of the University of British Columbia. Through the courtesy of Dr. H. R. MacMillan, the British Columbia Packers Limited seiner " Gospak " was placed at our disposal without cost. The following places were visited: Alert Bay, Rivers Inlet, Smith Inlet, Blunden Harbour, Hope Island, Fort Rupert, Harbledown Island, Village Island, Turnour Island, Gilford Island, Knight Inlet, Kingcome Inlet, and Quatsino. Several graveyards and very old village-sites were also examined. Movies and black and white photographs were taken. Negotiations for the purchase of a number of houseposts by the Totem Pole Preservation Committee were begun.

At Rivers Inlet a canoe of a special river type not represented in our collection was purchased for the Museum. British Columbia Packers Limited kindly transported it to Victoria free of charge.

Two brief field-trips were made to the Fraser Valley in the spring to examine archæological sites and private collections and to catalogue the Taulbut collection in the small museum at Mission. The second trip was made in the company of Mr. H. Nasmith, a Department of Mines geologist. The well-known Port Hammond midden and other sites were examined in the light of possible recent changes in sea-level. A joint article on the age of the Port Hammond site has since been prepared.

Kwakiutl houseposts at Hope Island (Nahwitti). Dr. Wayne Suttles in foreground.

Two other brief field-trips were made during the summer—to Saltspring Island and Pender Island. Notes were made on archæological sites and private collections. A number of very unusual stone artifacts from the collections of Mrs. B. Freeman and Mr. H. Spalding, of Pender Island, were borrowed for further study, and an article on them appears in this Report.

A vacation visit to the Whalen site at Boundary Bay in August led to the discovery of an unusual burial containing grave goods, which had been revealed by bulldozing operations in the main midden. The burial and artifacts, which included a beautifully sculptured antler haft containing a beaver-tooth cutting-blade, were excavated for the Museum collection. An illustrated article has since been written on the find and submitted for publication in a forthcoming volume of the Research Studies of Washington State College.

Five business trips were made to Vancouver during the year, and one to Bellingham, where movies were shown to the anthropology classes of Western Washington College of Education. In April the Anthropologist attended the Northwest Anthropological Conference in Seattle and presented a paper on Indian population trends in British Columbia between 1885 and 1954.

On November 15th the Anthropologist flew to Boston to attend the convention of the American Anthropological Association, and the period to December 9th was spent visiting many of the finest museums of Eastern Canada and the United States. These are listed elsewhere in this Report. At each museum every effort was made to meet professional members of the staff and discuss methods of exhibition, storage, and cataloguing, especially of anthropological materials. A special study was made of certain types of specimens from British Columbia in these museums. The whole trip proved to be of extreme value.

Educational work in the Museum included talks and demonstrations to the usual large number of Grade III classes who come to see Coast Salish materials, and to art classes and other visiting groups. Outside the Museum, lectures and film shows were given to the following groups: B.C. Indian Arts and Welfare Society (three public lectures), British Columbia Historical Association, Women's Auxiliary of the Social Credit League, Provincial Advisory Committee on Indian Affairs banquet, Oak Bay Scouts father and son banquet, St. Andrews C.G.I.T., and University of British Columbia anthropology classes. In addition, a course of twelve lectures called "An Introduction to Anthropology" was given at Victoria College evening division early in the year.

In the Museum, work was continued with the assistance of Mrs. McGavin on the reorganization of anthropological displays and storage. Several display-cases were reorganized. The display-rooms were closed off for some weeks while the new lighting was being installed. Plans are under way for major changes in the Indian exhibits next year.

Correspondence, visitors, and routine accessioning and care of the collections took considerable time. A large number of specimens to be loaned next year to the Vancouver Art Gallery were removed and photographed. A section of a Gitksan totem-pole collected in 1952 was placed on loan in the British Columbia Building at the Pacific National Exhibition. The photographic file and library were steadily built up, and a number of Coast Salish songs were recorded by Johnny James, of Becher Bay, and added to our stock of tape recordings.

Research was continued on Indian population numbers, distribution, and trends in the Province between 1835 and 1954, and this information was used to prepare maps which will appear in the Atlas of British Columbia Resources. A map showing aboriginal economic life was also prepared for the same purpose. The preparation of these maps and accompanying text took considerable time. In addition, a revised edition of the booklet "Thunderbird Park" was sent to the printer. Work was continued on a major study of ancient stone sculptures of South-western British Columbia and two shorter related papers. Mrs. McGavin spent considerable time retyping the manuscripts of Dr. Diamond Jenness's "The Faith of a Coast Salish Indian" and Dr. Wayne Suttles's "Katzie Ethnographic Notes," which we plan to publish very soon as memoirs in the Anthropology in British Columbia series.

TOTEM-POLE RESTORATION PROGRAMME

Carving operations were continued in Thunderbird Park. Mungo Martin and David Martin worked steadily from January 1st to December 15th, and Henry Hunt was employed from April 1st to December 15th. During the summer thirteen poles and other exhibits were erected in the park. This was a major undertaking and more costly than had been foreseen, as excavations for the bases required the use of power machinery and, in some cases, blasting.

Painting and preparation of the exhibits took much of the carvers' time. In addition, four Haida poles and one Kwakiutl pole were carved. Two of the Haida poles were corner posts for the house-front framework erected in the park. These were copied from photographs of an old house in Skidegate. A third was a copy of the mas-

sive mortuary pole collected from Tanoo in 1911 (No. 1392). The original was removed to storage after being copied. The separate bird figure on the top of this pole was copied from the original, which has been in storage since it was collected. The fourth Haida pole carved was a copy of the Tanoo Beaver frontal pole salvaged in 1954. Since the park is now full, this pole was stored, awaiting assignment to a suitable place elsewhere in the Province.

The Kwakiutl pole carved was a copy of one of three houseposts collected at Knight Inlet in 1914. It was copied and stored at this time because the original was too badly decayed even to move to storage.

New descriptive labels were printed and ensheathed in plastic, and attached to the exhibits in the park.

At the beginning of the year the possibility seemed good that extra carving contracts could be obtained to pay the carvers' way for part of the year, and it was decided to employ three carvers instead of just two so that Henry Hunt might obtain a year of training. Such outside work did not materialize, and, as mentioned above, other expenses were greater than had been foreseen, and it was necessary to lay the carvers off on December 15th until the beginning of the next fiscal year. It is heartening to report that a community project was organized by the Victoria Daily Times to employ the carvers during that three months in the carving of the world's tallest totem-pole. The pole is to be given to the City of Victoria when completed. Public support in the form of purchase of shares in the pole has been heavy, and much good publicity for the carving programme has resulted.

We are pleased to acknowledge once again the donation of logs by MacMillan & Bloedel Limited and British Columbia Forest Products Limited.

ZOOLOGICAL ACCESSIONS

Mammals

By gift—

Mrs. John Freeman, South Pender Island, one microtus.
C. S. Wood, Campbell River, one dusky shrew.

Birds

By gift—

Mrs. Banning, Victoria, one robin's nest with four eggs.
F. R. Biscoe, Victoria, one horned owl.
Gordon Brannan, Victoria, one screech owl.
A. R. Davidson, Victoria, one russet-backed thrush.
M. Dundas, Victoria, collection of South African birds.
Alfred Flett, Duncan, one horned owl.
Jamie Green, Victoria, one violet-green swallow.
Miss Jo Ann Guiguet and Miss Dianne Hamlet, Victoria, one osprey.
Dr. A. O. Hayes, Victoria, one flicker.
Dr. Bob Houston, Victoria, one lutescent warbler.
C. J. Mitchell, Nanoose Bay, one golden eagle.
Jack Scarlett, Victoria, one red phalarope.
Mrs. J. Sweeting, Victoria, one pheasant.

Amphibians and Reptiles

By gift—

Miss Debbie Boes, Victoria, one garter-snake.
G. A. Brook, Victoria, one alligator-lizard.
J. Burbridge, Lillooet, one bull-snake.

Miss M. M. Chappell, West Vancouver, three sets of rattlesnake rattles.
Mrs. N. Lazaruk, Victoria, one alligator.
Thomas Powell, Victoria, one lizard.
J. E. Storey (per Vernon Storey), Victoria, one painted turtle.

Fish

By gift—
Frank Miller, Victoria, one grunt-fish.

Invertebrates

By gift—
Miss Judy Benn, Victoria, one eyed hawk-moth.
K. R. Butler, Osoyoos, two scorpions.
Ron Butler, Victoria, one horntail.
E. Chattell, Parksville (per J. Caldwell, Victoria), one cave cricket.
Richard Cox, Victoria, one deep-sea amphipod.
Raymond DeMacedo, Victoria, specimen of white coral.
Floyd R. Hall, Victoria, one green sea-urchin.
R. E. Hammond, Gibsons, one European slug.
J. Hunter, Victoria, one pill bug.
D. C. McCarter, Nanaimo, one eyed hawk-moth.
John Henry Murphy and Ricky Cunningham, Victoria, one red starfish.
Miss Loraine Specht, Victoria, one moon snail.
A. Touchings, Victoria, one king-crab.

Palæontology

By gift—
Allan Brooks, South Pender Island, one ammonite and one fragment of dinosaur tooth.

ANTHROPOLOGICAL ACCESSIONS

The Alfred J. Carmichael Collection. — (Gift.) A collection of Coast Indian material to be added to the large collection donated in 1952 by Mr. A. J. Carmichael, Victoria.

The Marjorie Brooks Collection.—(Gift.) A large collection, mainly of archæological materials from the Okanagan, Shuswap, and Coast Salish areas of the Province, gathered by the late Major and Mrs. Allan Brooks, and presented by their son, Allan Brooks.

Haida

Slate carving of Bear Mother. Mrs. E. P. Gillespie, Victoria.
Slate totem. Mrs. Freda W. King, Victoria.
Argillite figure—chief with staff. R. T. MacKay, Victoria. (Purchase.)
Argillite figure—angel. R. T. MacKay, Victoria. (Purchase.)

Tsimshian

Marmot-skin chief's robe. Miss A. Walter, Victoria.
Rattle. Lieut.-Col. Brooke Stephenson, Victoria.
Goat-horn spoons, two. Mrs. A. J. O'Reilly, Victoria, (Purchase.)
Shaman's bird-shaped rattle. Mrs. A. J. O'Reilly, Victoria. (Purchase.)

Kwakiutl

Canoe figure. Fred Alexander, Winnipeg.
Perforated stone. In Brooks collection.
Antler wedges, two. In Brooks collection.
Copper bracelets, seven. In Brooks collection.
Piece of bronze. In Brooks collection.
Elbow adze. In Brooks collection.
Paddles, two. In Brooks collection.

Nootka

Small twined baskets, two. J. H. Wilson, Victoria.
Paddles, four. In Carmichael collection.
Stone hammer. In Carmichael collection.
Woven hat. In Carmichael collection.
Cedar-bark rain-cape. In Carmichael collection.
Ceremonial head-band. In Carmichael collection.
" D " adze. In Carmichael collection.
Fish-club. In Carmichael collection.
Slave-killer (wood). In Carmichael collection.
Fish-hooks, two. In Carmichael collection.
Bark-shredder. In Carmichael collection.
Model canoe. In Carmichael collection.
Canoe-bailer. In Carmichael collection.
Wood spoon. In Carmichael collection.
Model box. In Carmichael collection.
Net-shuttles, two. In Carmichael collection.
Model whaling float. In Carmichael collection.
Necklace of H.B.C. beads. In Carmichael collection.
Grass used in making baskets. Mrs. H. Bowechop, Neah Bay.

Coast Salish

Bone harpoon-valve. Miss A. Walter, Victoria.
Bone points, six. Miss A. Walter, Victoria.
Antler wedge. Miss A. Walter, Victoria.
Ground slate points, four. Miss A. Walter, Victoria.
Ground slate knives, two. Miss A. Walter, Victoria.
Chipped stone points, four. Miss A. Walter, Victoria.
Nephrite celts, four. Miss A. Walter, Victoria.
Fish-shaped whetstone. Miss A. Walter, Victoria.
Perforated stone sinker. Miss A. Walter, Victoria.
Ground slate chisel. F. G. Roe, Victoria.
Stone hammers, two. F. G. Roe, Victoria.
Skull (dolichocephalic). B. Nicholson, Victoria.
Stone hammer. E. Raunio, Websters Corners.
Nephrite celt. E. Raunio, Websters Corners.
Slate point. W. F. Stoba, Victoria.
Chipped point. A. MacInnes, Duncan.
Stone hammer. J. Proud, Royal Oak.
Chipped point. T. H. Ainsworth, Vancouver.
Antler harpoon (fragment). T. H. Ainsworth, Vancouver.
Stone hammer. V. C. Rowley, Victoria.
Skeleton. Staff.

Carved antler knife with beaver-tooth cutting-blade. Staff.
Beaver-tooth. Staff.
Stone chipped knife and antler handle. Staff.
Chipped knife-blade (fragment). Staff.
Antler beaver-tooth knife-handle (fragment). Staff.
Sandstone pestle. Gordon Flack, Victoria.
Drum. D. Fallardeau, Victoria. (Purchase.)
Dancing-shirt. D. Fallardeau, Victoria. (Purchase.)
Ground slate blade. H. W. Curtis, Victoria.
Barbed bone point. Staff.
Block of obsidian. Mrs. B. Freeman, Pender Island.
Parts of two skeletons. Mr. E. W. McMorran, Cordova Bay.
Spirit-dance costume. Mrs. Ann Bob, Victoria. (Purchase.)
Blue Hudson's Bay bead. Mrs. Fred McNutt, Egmont.
Chipped points, seven. Mrs. Fred McNutt, Egmont.
Stone implements, five. Mrs. Fred McNutt, Egmont.
Whetstone. Mrs. Fred McNutt, Egmont.
Concretion in shape of beaver. Mrs. Fred McNutt, Egmont.
Stone celts, three. In Brooks collection.
Chipped points, sixteen. In Brooks collection.
Harpoon-valves, antler, two. In Brooks collection.
Antler haft (fragment). In Brooks collection.
Antler wedge. In Brooks collection.
Bone awls, four. In Brooks collection.
Bone points, four. In Brooks collection.
Trade beads, four. In Brooks collection.
Nephrite celts, two. In Brooks collection.
Slate knife (fragment). In Brooks collection.
Slate point. In Brooks collection.
Chipped blade. In Brooks collection.

Interior Salish

Basket. In Carmichael collection.
Nephrite celt. R.C.M.P., Chilliwack.
Chipped drills, six. In Brooks collection.
Chipped points, eighty-eight. In Brooks collection.
Chipped blades, twenty-five. In Brooks collection.
Chipped scrapers, 101. In Brooks collection.
Worked stone fragments, 144. In Brooks collection.
Worked bone fragments, three. In Brooks collection.
Nephrite celt. In Brooks collection.
Hammer stone (?). In Brooks collection.

Carrier

Chipped point. D. Seaman, Victoria.

Cree

Moccasins. Miss A. Walter, Victoria.
Feathered war bonnet. Miss A. Walter, Victoria.

Miscellaneous

Sketch-book of Indian designs. Donald M. Stewart, Victoria.
Skull (European). R.C.M.P., Victoria.
Fish-hook and lure. Tribe unknown. William Downes, Victoria.
European trade goods. In Carmichael collection.
Cast of seated human stone bowl. Vancouver City Museum. (Purchase.)
Colour slides of pictographs. A. A. Shipton, Penticton.

NOTES ON THE FLORA AND FAUNA OF BUNSBY ISLANDS, B.C.

By G. Clifford Carl and Charles J. Guiguet, Provincial Museum, Victoria, B.C.

As a part of a long-range programme to make biological surveys of islands along the coast of British Columbia, the Bunsby Islands were visited from August 3rd to 11th, 1955. The following account is based upon material collected on this island group during this period.

The islands of the Bunsby group lie off the entrance to Ououkinsh Inlet on the west coast of Vancouver Island at about latitude 50° 6′ N. and longitude 127° 131′ W. There are five major islands in the group and a large number of associated islets, rocks, and reefs, some interconnected except during periods of high tide. The outermost island facing Checleset Bay is named Checkaklis; it is made up of several islets connected by intertidal flats and measuring altogether a little more than a mile in length. The other islands in the group apparently lack local names; for convenience in this report they are called Little Bunsby, West Bunsby, and East Bunsby. The latter is the largest, measuring about 1½ miles in length and about half a mile at the greatest width. West Bunsby is slightly smaller and Little Bunsby is about one-third mile in length.

The Bunsby group is separated from the mainland of Vancouver Island by a narrow shallow channel called locally Hollywood Pass. At low water when islets in the pass are connected to East Bunsby by gravel and mud bars, the channel is less than 100 yards in width and quite shallow. It cannot be considered a major obstacle to possible movements of animals to and from East Bunsby. The channels separating the islands in the group from each other, however, are much wider and deeper and usually with an appreciable current. They form what would appear to be fairly effective barriers to interisland travel with respect to small mammals and to other forms that are not strong swimmers.

The major part of the shore-line of each island in the group is precipitous rock sloping steeply into the water. In a few relatively protected bays there are pebbly or stony beaches, and at the heads of the numerous inlets there are gravelly mud-flats which are exposed at about half-tide levels. Marine life, particularly seaweeds, abound. Exposed rocks and reefs are densely covered with a lush growth of plant life, while starfish, sea-cucumbers, and molluscs were particularly noticeable except on the gravel flats, which were relatively lifeless and stagnant.

For the most part, the islands are covered with lush vegetation typical of the west coast of Vancouver Island. Dominant trees were Sitka spruce and western hemlock, with occasional red cedar and Douglas fir. A dense undercover of salal, devil's-club, and other shrubs made overland travel difficult. A conspicuous feature of the vegetation flanking a bay on East Bunsby opening on Gay Passage was a stand of alder, apparently marking the site of a former Indian settlement. A noteworthy shrub seen at several points was the cascara.

CLIMATE

While no meteorological data are available for the Bunsby Island group, records of temperature and rainfall of the Kyuquot area, about 8 miles to the south-east, indicate that this portion of the coast has a mild, wet climate, as shown by the following table.

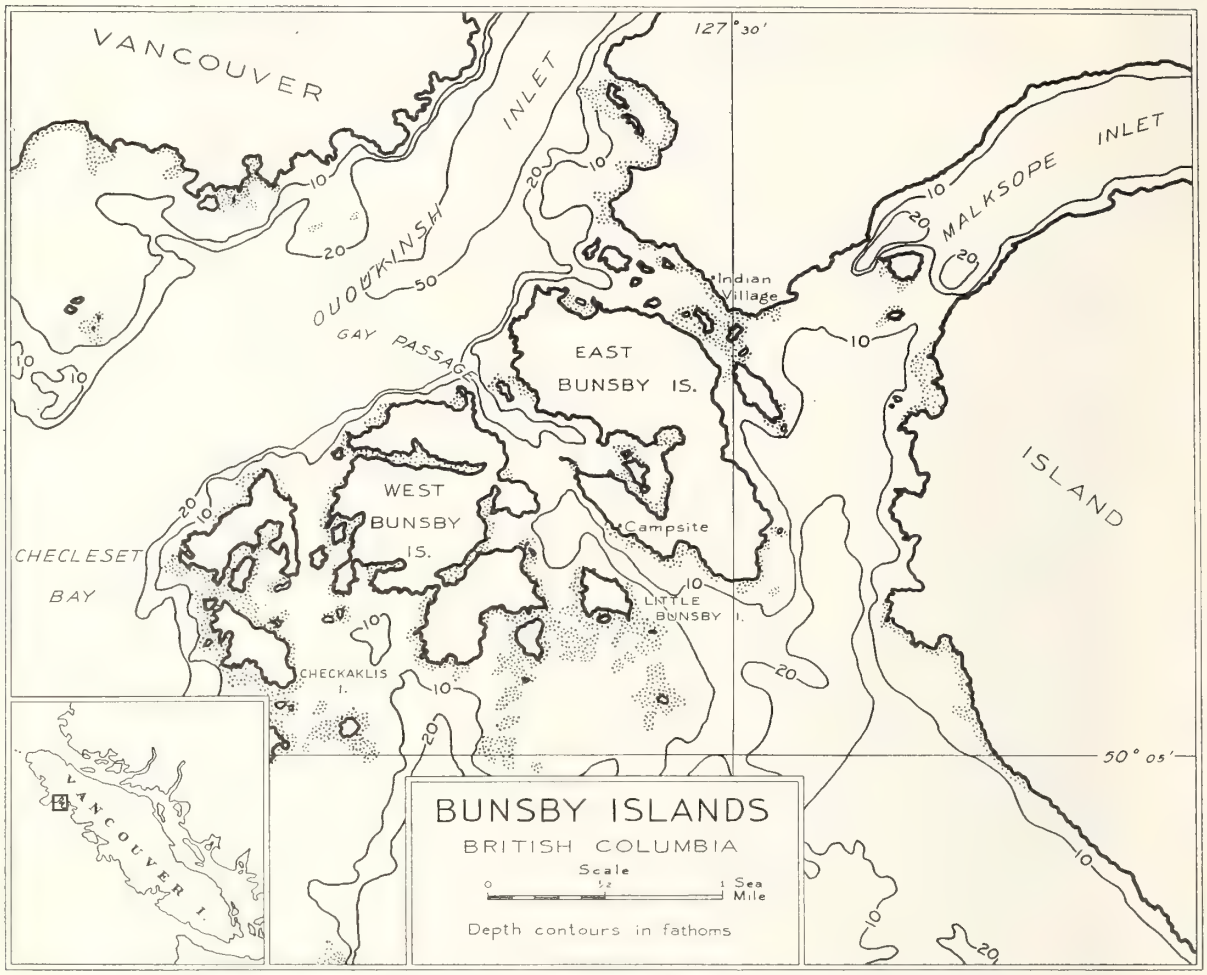

Fig. 1. Chart showing location and geographic relationships of the Bunsby Islands, British Columbia.

Average Monthly Mean Temperature, Spring Island

	Degrees F.		Degrees F.
January	37	August	58
February	41	September	56
March	40	October	50
April	44	November	46
May	49	December	43
June	53	Year	48
July	56		

MONTHLY PRECIPITATION, KYUQUOT

	1954	Average
January	8.98	13.91
February	19.01	10.26
March	4.13	11.32
April	8.14	9.24
May	2.57	6.48
June	8.93	4.32
July	8.16	4.59
August	3.26	3.98
September	12.97	7.52
October	14.19	13.38
November	24.44	15.23
December	15.14	15.19
Year	115.97	123.18

During our short stay (August 3rd to 11th) it rained on only one day; the remaining days were sunny and warm, quite atypical of west coast weather.

PAST HISTORY

The islands apparently have never been inhabited except by natives. Near our camp-site on East Bunsby facing on Gay Passage was an extensive midden measuring about 100 yards in length along the beach-line and from 6 to 8 feet deep. Above the midden, commanding a view of the passage to the south and to the north, was a relatively flat area overgrown with alder, which presumably marked the site of an Indian settlement, though no excavations or other signs of structures were discernible.

A young Indian from the Kyuquot area was questioned about the possibility of this site being occupied in recent years, but he had no knowledge of this.

We learned, however, from other sources that a lone Indian, Saxey by name, a descendant of the Chicklisets, lived for a while on Little Bunsby Island; signs of a shack were still present at the time of our visit.

On the Vancouver Island side of Hollywood Pass are the remains of an Indian settlement known locally as Hollywood Village. It had been unoccupied for at least two years at the time of our visit, judging by the growth of underbrush and other signs. Most of the buildings were either partially fallen down or in very poor condition. Two carved wooden figures in human form were entirely overgrown by salmonberry and other underbrush; they, too, were in an advanced stage of decay, beyond being salvaged.

STARFISHES AND RELATIVES

The following members of the starfish group (Echinoderms) were observed, some in quite large numbers.

Pisaster ochraceus. Ochre Starfish.

The common purple form of this heavy-set species was abundant on all the rocky beaches, ranging from the intertidal zone into deeper water. The orange colour phase was particularly common; on one reef measuring about 100 feet in length there were twenty orange individuals and fifty-two purple.

Dermasterias imbricata. Leather Star.

The soft-skinned leather stars were common, some reaching a large size. One individual measured 12 inches in diameter.

Henricia leviuscula. Red Starfish.

Evasterias troscheli. Long-rayed Star.

Pycnopodia helianthoides. Sunflower Star.

Solaster dawsoni. Dawson Sun Star.

Solaster stimpsoni. Stimpson Sun Star.

Crossaster papposus. Rose Star.

Patiria miniata. Sea Bat.

Stichopus californicus. Giant Sea Cucumber.

This largest of the cucumbers (up to 18 inches in length) was abundant; both the common red colour phase and a dark mottled colour phase were represented.

Strongylocentrotus franciscanus. Large Purple Urchin.

Strongylocentrotus purpuratus. Small Purple Urchin.

Both of these species of sea-urchins were numerous, but the closely related green sea-urchin (*Strongylocentrotus drobachiensis*) was not observed.

Molluscs

Astræa inæqualis. Turban Shell.

Common in certain areas. The shells were often encrusted with coralline algæ and bryozoan colonies.

Tegula funebralis (A. Adams). Black Turban.

Apparently abundant; shells of this species were the most commonly used shelters of hermit-crabs.

Searlesia dira (Reeve). Dire Whelk.

Shells were found occupied by hermit-crabs.

Thais emarginata. Short-spired Purple.

Empty shells were also occupied by hermit-crabs.

Haliotus kamtschatkana. Northern Abalone.

Abalones were locally abundant, especially on Little Bunsby Island, which was more exposed to surf. Most were at about the zero tide level, where they could be collected only with the aid of a net. Empty shells were frequently found high above the tide-line, where they had apparently been dropped by birds or other animals.

Polinices lewisi. Moon Snail.

Moon snails, probably of this species, were common, judging by the number of sand-collar egg-cases to be seen.

Katharina tunicata. Leather Chiton.

Chitons were very scarce; individuals apparently of the above species were found only with difficulty, especially on East Bunsby despite the fact conditions seemed most suitable.

Mopalia muscosa. Mossy Chiton.

One individual was found on the beach on East Bunsby Island.

Schizothærus nuttalli. Horse-clam.

Saxidomus giganteus. Butter-clam.

Protothaca staminea. Little-neck.

Mya arenaria. Soft Shell.

Mytilus edulis. Edible Mussel.

Shells of the above bivalve molluscs were common in an Indian midden above the beach at our camp-site and at the tide-line below the midden where they had been washed by wave-action.

Ostrea lurida. Native Oyster.

A few native oysters and some empty shells were found on the beach at the camp-site on East Bunsby Island.

Ariolimax maximus. Giant Slug.

This large land form was abundant on all the islands, particularly on Checkaklis where it was a serious pest to the mouse-trapper, springing traps, covering the mechanism with sticky mucus, and damaging specimens.

(Photo by G. C. Carl.)

Fig. 2. Camp-site, East Bunsby Island.

Prophysaon andersoni. Anderson Slug.

This handsome native species was observed on East Bunsby and was probably present on all the islands. Both the common grey colour phase and a yellow colour phase were noted.

Haplotrema sportella.

Polygyra columbiana.

Both the above species of snails were present; on several occasions they were found damaging mice or shrews in traps.

MILLIPEDES AND CENTIPEDES

The following species were kindly identified by Dr. R. V. Chamberlin, of the University of Utah, Salt Lake City, Utah.

Otocryptops sexspinosus (Say). Centipede.
East and West Bunsby Islands.

Geophilus glyptus Chamberlin. Centipede.
Little Bunsby Island.

Cheiletha kincaidi Chamberlin. Centipede.
East Bunsby Island.

Nearctodesmus malkini Chamberlin. Millipede.
East Bunsby and Little Bunsby Islands.

Saiulus setifer Chamberlin. Millipede.
East Bunsby Island.

CRUSTACEANS

No attempt was made to make a complete collection of crustacea; only those immediately available were taken. The crabs and hermit-crabs have been identified by Dr. J. F. L. Hart, of Victoria, B.C., and the amphipods by Dr. E. L. Bousfield, of the National Museum of Canada, Ottawa.

Crabs

Pachycheles rudis Stimpson.
Pugettia producta Randall. Northern Kelp Crab.
Pugettia gracilis Dana. Graceful Kelp Crab.
Pugettia richii Dana.
Mimulus foliatus Stimpson. Decorator Crab.
Scyra acutifrons Dana.
Cancer magister Dana. Edible Crab.
Cancer oregonensis (Dana). Oregon Crab.
Lophopanopeus bellus bellus (Stimpson). Black-clawed Crab.
Hemigrapsus nudus (Dana). Purple Shore Crab.

Hermit-crabs

Pagurus hirsutiusculus (Dana). Hairy Hermit-crab.
Pagurus granosimanus (Stimpson). Granular Hermit.
Petrolisthes cinctipes (Randall). Flat-topped Crab.

Amphipods

Anisogammarus ramellus (Weckel). Fresh-water Amphipod.

These fresh-water "shrimp" were abundant in a small stream near our camp-site on East Bunsby. Many were found feeding upon a drowned mouse, and others were located under stones and other debris. The species has previously been reported only from Triangle and Lanz Islands (Carl, Guiguet, and Hardy, 1952).

Anisogammarus locustoides (Brandt). Marine Amphipod.

This species is usually considered to be a marine form, according to Dr. Bousfield, but we found it in fresh water along with *A. ramellus*. The collecting site, however, was not far above high tide. The species is known from Siberia and Alaska but has not previously been reported from British Columbia.

Isopods

Porcellio scaber Latreille. Sow-bug (Wood-louse).

The common sow-bug was present on both East and West Bunsby Islands.

Ligidium gracile Dana.

The native isopod was collected on East Bunsby Island; it was probably present on the other islands of the group also.

BARNACLES

The following barnacles were kindly identified by Mr. I. E. Cornwall, Victoria, B.C.

Balanus cariosus (Pallas).

A large species up to 2 inches in height, common on the rocky shore below the half-tide level.

Balanus glandulus Darwin.

A smaller species about three-eighths of an inch in height, on wood and on shells of the former species.

(Photo by G. C. Carl.)

Fig. 3. Gay Passage from camp-site, Bunsby Islands.

Mitella polymerus (Sowerby). Goose-barnacle.

Colonies of this barnacle were found only on Little Bunsby on rocky shore exposed to wave-action.

INSECTS

The following insects have been kindly identified by Mr. George A. Hardy, of the Museum staff, except in the case of the Hemiptera, which have been named by Mr. William Downes, of Victoria, B.C.

Beetles (Coleoptera)

Pterostichus lama Men. Large Ground-beetle.
Pterostichus herculeanus Mann. Common Ground-beetle.
Zacotus matthewsi LeC. Bronze Beetle.
Necrophorus melsheimeri Kby. Burying-beetle.
Athous vittiger LeC. Click-beetle.

Snake-flies (Raphidiidæ)

Raphidia sp.

Two-wing Flies (Diptera)

Tabanus sonomensis O.S. Horse-fly.

Bees and Wasps (Hymenoptera)

Vespula consobrina DeSauss. Black Hornet.
Bremus sp. Bumble-bee.
Camponotus levigatus (F. Smith). Carpenter-ant.
Coleocentrus sp. Ichneumon Fly.
Trichiosoma triangulum Kby. Sawfly.

Butterflies and Moths (Lepidoptera)

Septis vulturosa Grt. Quaker.

Straight-winged Insects (Orthoptera)

Ceuthophilus sp. Camel-cricket.

Bugs (Hemiptera)

Philænus leucopthalmus (L.) vars. *fabricii* and *pallidus*. Common Spittle-bug.
Aphrophora permutata Uhl. Leaf-hopper.
Lopidea ampla Van D. Leaf-hopper.
Stenodema vicinum (Prov.). Leaf-hopper.

AMPHIBIANS

Bufo boreas. Northwest Toad.

Toads were present on East Bunsby and Checkaklis Islands; though they were not observed on the other islands of the group, they were probably present.

Aneides ferreus. Clouded Salamander.

One specimen, an adult, was collected on Little Bunsby by C. J. Guiguet on August 6th. Search in likely places on the larger islands failed to reveal others, though they are probably present. Suitable habitat for these animals is very restricted; there is very little fallen timber, and most of this is spruce, which provides poor surroundings for salamanders.

REPTILES

The reptiles were represented by garter-snakes only. These were kindly identified by Dr. Murray L. Johnson, of the College of Puget Sound, Tacoma, Wash., as follows:—

Thamnophis ordinoides. Puget Garter-snake.

Common on East Bunsby Island. Snakes probably of this species were also seen on West Bunsby.

Thamnophis sirtalis. Northwestern Garter-snake.

Three specimens were collected on East Bunsby Island; one was engaged in catching fish in a tide pool.

Dr. Johnson notes that the specimens show considerable red pigment and the dorsal stripes are rather narrow; they best correspond with the subspecies *Thamnophis sirtalis fitchi*.

MAMMALS

The mammalian population of the Bunsby Islands was small at the time of our investigation. There was a definite lack of sign; droppings, cuttings, runways, and other indications of the presence of mammals were sparse or altogether lacking. The small

amount of sign present was located mainly at the edge of the forest and the sea-shore. The coniferous forest dominating the interior of the islands was practically lifeless.

For the purpose of this investigation, one mouse-trap set for one night constitutes a unit termed "one trap-night." On this basis a total of 1,028 trap-nights were put in on the Bunsby Island group. Mouse-trap lines were made up of thirty-six to forty-eight Victor snap traps set from 15 to 20 feet apart in likely-looking areas. Due to the small numbers of mammals present, it was found necessary to shift the trap-lines after each night of trapping, for on the second and third nights nothing was taken. At the beginning of our work we set our total complement of 188 mouse-traps. In the ensuing days, through breakage, this number was reduced gradually to about 150 traps. None the less, shifting this number of traps daily, by boat, the only sensible means of travel, constituted a chore which took much of the expedition's time. Walnut, soft cheese, and sardine were utilized as bait, and traps were rebaited each day.

Snap-trap Investigations

The small mammal population was made up of the shrew, *Sorex obscurus,* the meadow mouse, *Microtus townsendi,* and the white-footed mouse, *Peromyscus maniculatus. Sorex* were taken on all the Bunsby Islands, one *Microtus* was taken on Little Bunsby Island, and no indication of their presence was found elsewhere in the group. *Peromyscus* were taken on all islands except Little Bunsby.

The following table shows the number of trap-nights on each island and the resultant catch over a seven-day period.

Island	Trap-nights	*Sorex* Taken	*Microtus* Taken	*Peromyscus* Taken
East Bunsby	300	11	....	16
West Bunsby	392	4	....	8
Little Bunsby	144	2	1	....
North Checkaklis	96	1	....	11
South Checkaklis	96	1	....	11
Totals	1,028	19	1	46

In analysing the catch of *Sorex* it was found that a total of four males was taken to a total of fifteen females. Of the four males, two were fully adult, the other two juveniles. The catch of fifteen females was made up of eight adults, none of which bore embryos but four of which were lactating. The remaining seven females were juveniles. All of the females and the juvenile males were in full summer pelage, while the adult males were in a state of moult, showing fresh summer pelage only on head, back, and rump. The single *Microtus* taken was an adult female which showed no indication of having bred.

The total catch of forty-six *Peromyscus* showed a balanced sex ratio—twenty-six males to twenty females. Of these, thirteen were adult, ten of the adults being males; six were sub-adult, three of either sex; twenty-seven were juveniles, thirteen of them males. Adult and sub-adult female *Peromyscus* were lactating.

Preliminary examination of the small samples taken indicate no apparent degree of difference between these three species and their counterparts on closely adjacent Vancouver Island. The channels segregating the islands are very narrow, and in some cases very shallow. At extreme low tide it is quite possible that some of the channels go dry, as between North and South Checkaklis, and between Little and West Bunsby Islands for example. Pending further investigation and additional specimens, we regard the shrews inhabiting the Bunsby Islands as *Sorex obscurus isolatus,* the meadow-mouse as *Microtus townsendi laingi,* and the white-footed mouse as *Peromyscus maniculatus interdictus.*

Other Mammals

Myotis yumanensis saturatus. Little Brown Bat.

Only one bat was observed during our entire stay on the island. It was observed passing by close to the timber at the camp-site late one evening; and the succeeding evening one was collected, presumably the same animal, as it was over the same route.

Procyon lotor vancouverensis. Raccoon.

Raccoons have been seen on the islands by fishermen passing through the narrow channels. Mr. Stanley Sharcott, of Kyuquot, reported seeing one on West Bunsby last year (1954). In several localities on West Bunsby and Checkaklis Islands old remains of the crab *Cancer productus* were found dragged in beneath logs. Whether this old sign was the work of raccoon or mink was impossible to determine, but on the strength of Mr. Sharcott's report, plus a skull found on the mainland beach immediately opposite East Bunsby Island, we include this animal on the faunal list of the Bunsby Islands.

Mustela vison evagor. Mink.

The tracks and droppings of mink were observed on Little Bunsby and Checkaklis Islands. The animals had been feeding upon small crabs and fish, judging from fragments found in the droppings. No specimens were taken, but undoubtedly the Vancouver Island mink is represented.

Euarctos americanus vancouveri. Black Bear.

Droppings and sign of this animal were sparse and found only on East and West Bunsby Islands; no animal was seen. No indication of bears was observed on Little Bunsby or Checkaklis Islands, although the narrow passages are not effective barriers to these animals. Apart from the sea-beach there is little to attract bears to these islands.

Canis lupus crassodon. Wolf.

The occasional wolf has been seen and heard on the Bunsby Islands according to Mr. Sharcott. We found no evidence of their presence at the time of our investigations.

Eumatopias jubata. Sea-lion.

The skeletal remains of one of these animals was found on a beach on East Bunsby Island.

Phoco vitulina richardsoni. Hair-seal.

Seen on several occasions in the waters surrounding the islands, where they no doubt feed on the large numbers of perch, rockfish, and ling-cod that abound along the reefs.

Tamiasciurus hudsonicus lanuginosus. Red Squirrel.

Squirrels were heard on East Bunsby on only two or three occasions and on West Bunsby on four occasions. Two were collected on the latter island. Old spruce-cones and cuttings found under logs and tree-roots indicated that both North and South Checkaklis have been occupied by these animals, but none was seen or heard and no fresh sign was observed. We found no evidence of red squirrels on Little Bunsby Island.

Odocoileus hemionus columbianus. Black-tailed Deer.

Deer were present on all of the islands, but in such limited numbers that none was seen during our stay. Occasional small-sized tracks were seen where single animals had walked the beaches at night. A few droppings, some browse sign, and a fairly recent skeleton were the only other indications that these animals were present.

Discussion

Although small, the list of mammal species here presented for these islands met our expectations. The origin of the mammal fauna here is Vancouver Island, which in itself has a limited mammalian fauna.

The Bunsby Islands themselves are not ecologically suited for small mammals, particularly voles. Grass was found in quantity only in a restricted area on East Bunsby Island and at the north end of West Bunsby Island, and there was no sign of them in this habitat. Little Bunsby Island is merely a large reef bearing a few sandy beaches, precipitous rocky shores, and sparse salal undercover under a spruce-hemlock forest association. A certain amount of deciduous growth occurs at the south end of the island, including willow, *Salix* sp., red alder (*Alnus rubra*), thimbleberry (*Rubus parviflorus*), salmonberry (*Rubus spectabilis*), and red huckleberry (*Vaccinium parvifolium*), yet no *Peromyscus* appeared to be utilizing this island. The single Microtus taken was trapped on the beach in sparse goose-grass (*Salicornia* sp.) where little cover occurred, apart from the limbs of a fallen hemlock. The remaining islands are composed largely of rock, coniferous trees, and a few sandy beaches.

(Photo by G. C. Carl.)

Fig. 4. East Bunsby Island, looking south-east toward Vancouver Island.

It may be assumed logically, we believe, that the bear, raccoon, mink, and deer not represented by specimens in our collections on the islands, but their presence established by definite tracks and sign, are of the same subspecies occurring on Vancouver Island. We have so designated this subspecific affinity in the annotated list. The red squirrels and the bat are identified to subspecies through specimens on hand. Peromyscus, Sorex, and Microtus, more plastic species, and due to their small size more subject to isolation through the barriers of water, are, as previously noted, tentatively identified subspecifically with their counterparts on Vancouver Island.

BIRDS

Due to the pressure of time, avian studies were considered secondary to marine and mammalian work on this expedition. Nevertheless, in the course of the other work, all birds observed were recorded, and a notable lack of both sea and land birds was noted. The following is a complete list of the species of birds recorded by us from August 4th to August 10th on the Bunsby Islands. Most species here listed were represented by very few individuals; the most often seen birds were crows, ravens, chestnut-backed chickadee, and golden-crowned kinglets. Other species including the water-birds were recorded in small numbers, most of them by only one or two individuals.

Birds Recorded

Common loon, *Gavia immer* (two); great blue heron, *Ardea herodias* (one); white-winged scoter, *Melanitta fusca* (two); American merganser, *Mergus merganser* (female with young); sharp-shinned hawk, *Accipiter streatus* (one); bald eagle, *Haliæetus leucocephalus* (nest, two adults, two fledglings); blue grouse, *Dendragopus obscurus* (tail feathers found); ruffed grouse, *Bonasa umbellus* (one); black oyster-catcher, *Hæmatopus bachmani* (two); black turnstone, *Arenaria melanocephala* (eight); spotted sandpiper, *Actitis macularia* (one); greater yellow-legs, *Totanus melanoleucus* (one); sanderling, *Crocethia alba* (three); glaucous-winged gull, *Larus glaucescens* (adults with flying young on southern reefs of Bunsby Islands); pigeon guillemot, *Cepphus columba* (four); band-tailed pigeon, *Columba fasciata* (three); rufous humming-bird, *Selasphorus rufus* (four); belted kingfisher, *Megaceryle alcyon* (two); red-shafted flicker, *Colaptes cafer* (scattered individuals throughout area); pileated woodpecker, *Ceophleus pileatus* (two); hairy woodpecker, *Dryobates villosus* (four); western flycatcher, *Empidonax difficilis* (one); Steller jay, *Cyanocitta stelleri* (four); raven, *Corvus corax* (common); northwestern crow, *Corvus caurinus* (common); chestnut-backed chickadee, *Parus rufescens* (common); brown creeper, *Certhia familiaris* (two); winter wren, *Troglodytes troglodytes* (generally distributed throughout coniferous forest); robin, *Turdus migratorius* (scattered individuals and pairs); hermit-thrush, *Hylocichla guttata* (heard on one or two occasions); Swainson thrush, *Hylocichla ustulata* (six); golden-crowned kinglet, *Regulus satrapa* (flocks seen and heard); Townsend warbler, *Dendroica townsendi* (four); red crossbill, *Loxia curvirostra* (small flock heard); fox-sparrow, *Passerella iliaca* (one); song-sparrow, *Melospiza melodia* (fairly common along forest edges).

BUNSBY ISLAND PLANTS

Collected August, 1955, by G. C. Carl. Identified by A. F. Szczawinski, of the Provincial Museum.

Lichens

Evernia prunastri var. *soredifera* Ach.
Lobaria pulmonaria (L.) Hoffm.

Polypodiaceæ

Dryopteris austriaca (Jacq.) Woynar.
Polystichum munitum (Kaulf.) Presl.

Campanulaceæ

Campanula petiolata A.DC.=(*C. rotundifolia* of American authors, not L.).

Caprifoliaceæ

Lonicera involucrata Banks.
Sambucus pubens Michx.

Caryophyllaceæ

Stellaria borealis Bigel.

Chenopodiaceæ

Salicornia pacifica Standl.=(*S. ambigua* of many authors, not of Michx.).

Compositæ

Achillea borealis Bong.
Sonchus asper (L.) Hill.

Crassulaceæ

Sedum spathulifolium Hook.

ERICACEÆ

Arctostaphylos uva-ursi (L.) Spreng.
Vaccinium parvifolium Smith.

GRAMINEÆ

Bromus carinatus Hook. & Arn.
Calamagrostis canadensis (Michx.) Beauv.
Elymus molis Trin.

IRIDACEÆ

Sisyrichium bellum Wats.

LABIATÆ

Stachys emersonii Piper=(*S. ciciata* var. *pubens* A. Gray).

LEGUMINOSÆ

Vicia gigantea Hook.

LILIACEÆ

Allium cernuum Roth.
Lilium columbianum Hanson=(*L. parviflorum* Holz.).
Maianthemum bifolium DC. var. *kamtschaticum* (Gmel.) Jeps.

ORCHIDACEÆ

Spiranthes romanozoffiana Cham.

PLANTAGINACEÆ

Plantago juncoides Lam=(*P. maritima* L.).

POLYGONACEÆ

Rumex occidentalis Wats.

PORTULACEÆ

Montia sibirica (L.) Howell.

RHAMNACEÆ

Rhamnus alnifolia L'Her.
Rhamnus purshiana DC.

RIBESACEÆ

Ribes inerme Rydb.=(*Grossularia inermis* (Rydb.) Cov. & Brit.).

ROSACEÆ

Fragaria bracteata Hel.
Holodiscus discolor (Pursh.) Maxim.
Pyrus diversifolia Bong.=(*P. rivularis* Dougl.).
Rosa gymnocarpa Nutt.
Rubus parviflorus Nutt.
Rubus spectabilis Pursh.
Rubus vitifolius C. & S.

RUBIACEÆ

Galium aparine L.

SAXIFRAGACEÆ

Heuchera micrantha Dougl. var. *pacifica* R.B.L.
Tiarella trifoliata L.

SCROPHULARIACEÆ

Castilleja hispida Benth.
Castilleja miniata Dougl.
Scrophularia lanceolata Pursh.

UMBELLIFERÆ

Heracleum lanatum Michx.

UNIQUE STONE ARTIFACTS FROM THE GULF ISLANDS

By Wilson Duff, Provincial Museum, Victoria, B.C.

In archæological collections from a few Gulf Islands sites there occur several types of small soapstone artifacts, most of which are of unknown use and unlike any others known to me. Although little is known about the cultural relationships of this unique soapstone complex, it will be of value to bring it to wider notice.

PROVENIENCE

The artifacts first came to my attention during a field trip to Pender Island in August, 1955, which was made as part of a continuing archæological survey of the Gulf Islands. The greatest number belong to Mr. Herbert Spalding, Mrs. B. Freeman, and Mrs. Hope Jennens, all of South Pender Island, and I wish to thank these able collectors for their co-operation in lending their artifacts for study.

These collections were made predominantly from one site—the Canal site between North and South Pender Islands. Some years ago a canal was cut through the narrow isthmus joining the two islands to allow passage for small boats. The shell deposits occur on the North Pender side of the canal, forming a long, narrow site which extends across the isthmus, one end facing on Port Browning, the other (and larger) facing Bedwell Harbour. The deposits cover an area some 400 yards long by 20 yards wide, and have a depth in places of 5 feet or more. The flow of water through the canal is rapidly eroding these deposits away. Of the forty-two artifacts dealt with in this paper, twenty-seven are attributed to this important site. All but two of these are from the private collections mentioned above; in addition, one (C-8) is in the National Museum of Canada and one (J-1) in the Provincial Museum.

A re-examination of the Provincial Museum collections revealed several more artifacts of these types. Most of these had come to the Museum in the collection of Mr. and Mrs. F. J. Barrow, of Sidney, who had found them at two sites—one on the Mayne Island side of Active Pass (which yielded seven of the artifacts), and the other on Montague Harbour, Galiano Island (three artifacts).

The remaining artifacts are from collections and sites as follows: One (D-3) is in the Provincial Museum, from Chemainus; one (F-2) is in the American Museum of Natural History and is said to come from Puget Sound; one (C-3) is in the National Museum of Canada, from Ganges Harbour, Saltspring Island; and one (E-9) in a private collection in Victoria, from Saltspring Island. Finally, one (F-1) in the Spalding collection is not from the Canal site, but from some distance inland on South Pender Island.

In summary, the artifacts comprising this soapstone complex are found concentrated at the Canal site and sporadically at a number of other sites near by. The labrets, however, have a somewhat wider distribution, as will be described below.

ASSOCIATED ARTIFACTS

In the same collections and from the same sites are large numbers of other artifacts of types more commonly found in the region. Because of the casual way in which they were collected, however, it is not possible to reconstruct accurately the artifact assemblage of which the soapstone artifacts form a part. Indications are that this assemblage would differ only in detail from other archæological cultures of the area.

For example, the following artifact types in the Pender Island collections are attributed to the Canal site: Ground slate points and knives; slate "pencils"; chipped points, blades, and scrapers; nephrite celts; pestle-shaped stone hammers; elk-horn wedges; barbed bone points; grooved stone sinkers; large lignite beads; and a lamellar blade of obsidian similar to those found by Borden in the Whalen II deposits (Borden,

(Photos by Department of Trade and Industry, Photographic Branch.)

Fig. 1. Four artifacts from the Canal site, showing typical texture and finish. Natural size. Top, A-1; centre, A-2; bottom left, B-1; bottom right, B-2.

1950, p. 20). Strangely, there are no harpoons in these collections. The above cannot, of course, be regarded as the artifact inventory of the culture that produced the soapstone artifacts, because the site may have supported more than one culture at different times. But it does seem to indicate that the culture that produced them was not otherwise radically different from other archæological cultures of the area.

MATERIAL

With only a few exceptions, the artifacts are made of types of stone which may be called soapstone. The colour varies from light grey to black, frequently with greenish tinges which sometimes give a jade-like appearance. The hardness also varies, but the rock is generally quite soft.

Dr. Stuart Holland, of the British Columbia Department of Mines, examined most of the artifacts, and gave the following information:—

"Variations in mineral content and texture are noted, but the rocks are generally soapstone, consisting of the minerals talc, chlorite, epidote, possibly feldspar and actinolite in slightly varying proportions. Magnetite is almost universally present."

On the source of the rock, Dr. Holland pointed out that soapstone is not found as bedrock on the Gulf Islands, and the possibility of boulders being transported there by glacial action is very slight. The most likely source would seem to be the Fraser River, where "abundant soapstone and serpentine material identical to these pieces may be picked up now on the bars in the vicinity of Boston Bar and Lytton."

The presumed Fraser River source for the material has many interesting implications. The fact that none of these artifact types have been found in that region suggests that the Gulf Islanders obtained the material by trade in its raw form. They probably traded for nephrite at the same time, as nephrite is presumed to come from the same source, and celts of that material were found in the same Gulf Island sites as the soapstone artifacts. Fraser River soapstone boulders are also presumed to be the source of material for the seated human figure bowls and related sculpture found in the region from Kamloops to Victoria. At present, however, there is no other evidence to relate the soapstone artifacts to this sculptural complex.

DESCRIPTION

For descriptive purposes, the artifacts have been divided into ten types, arbitrarily called A to J (*see* Figs. 2 and 3). The first five types are each represented by a number of specimens, of which the first may be regarded as the type specimen. All of these seem to be utilitarian objects but are of unknown use. The next four types are each represented by a single specimen (except Type F, two specimens). One of these, H, is probably a gorget-like ornament; the others are of unknown use. Finally, labrets are included as Type J because they are usually of the same material and are found in the same collections. Labrets have a somewhat wider archæological distribution in this area than the rest of the soapstone complex. Only those from the Gulf Islands collections are illustrated, but the available information on others is summarized.

Type A (Four Specimens)

Well-made clasp-like objects 1¼ to 1½ inches long and three-quarters to 1¼ inches wide. Three are from the Canal site and the fourth (which may not in fact be the same type) is from Active Pass. Their shape may be seen in the figures. The top or dorsal side is slightly dished or bears a deep wear-polished groove which expands toward the ends. In one case the lips of this groove are decorated. The other side has clasp-like projections (except in one case), which seem to have been subjected to stresses as they have often been broken off.

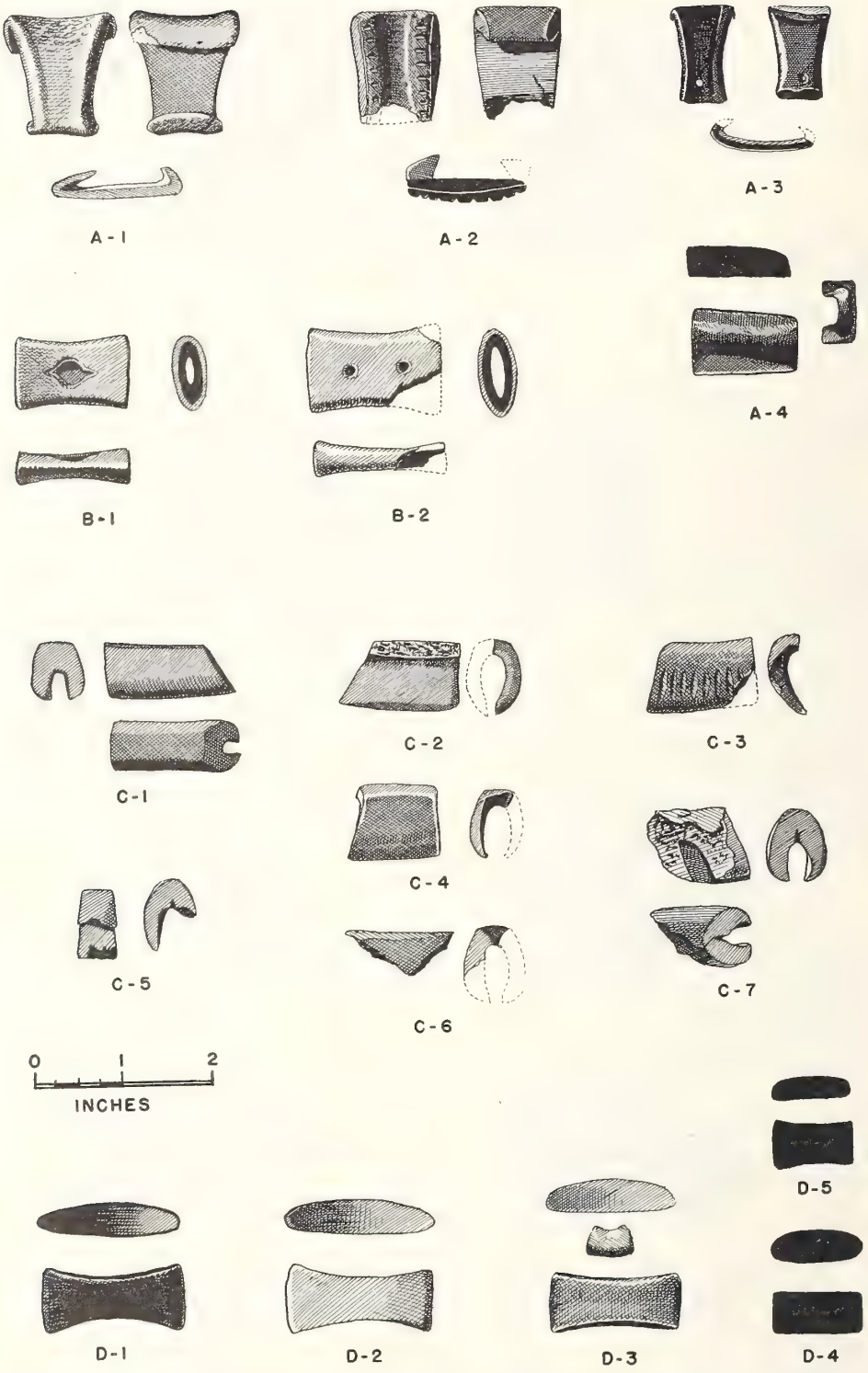

Fig. 2. Artifact types A to D. Half natural size. (Drawn by W. Duff and F. L. Beebe.)

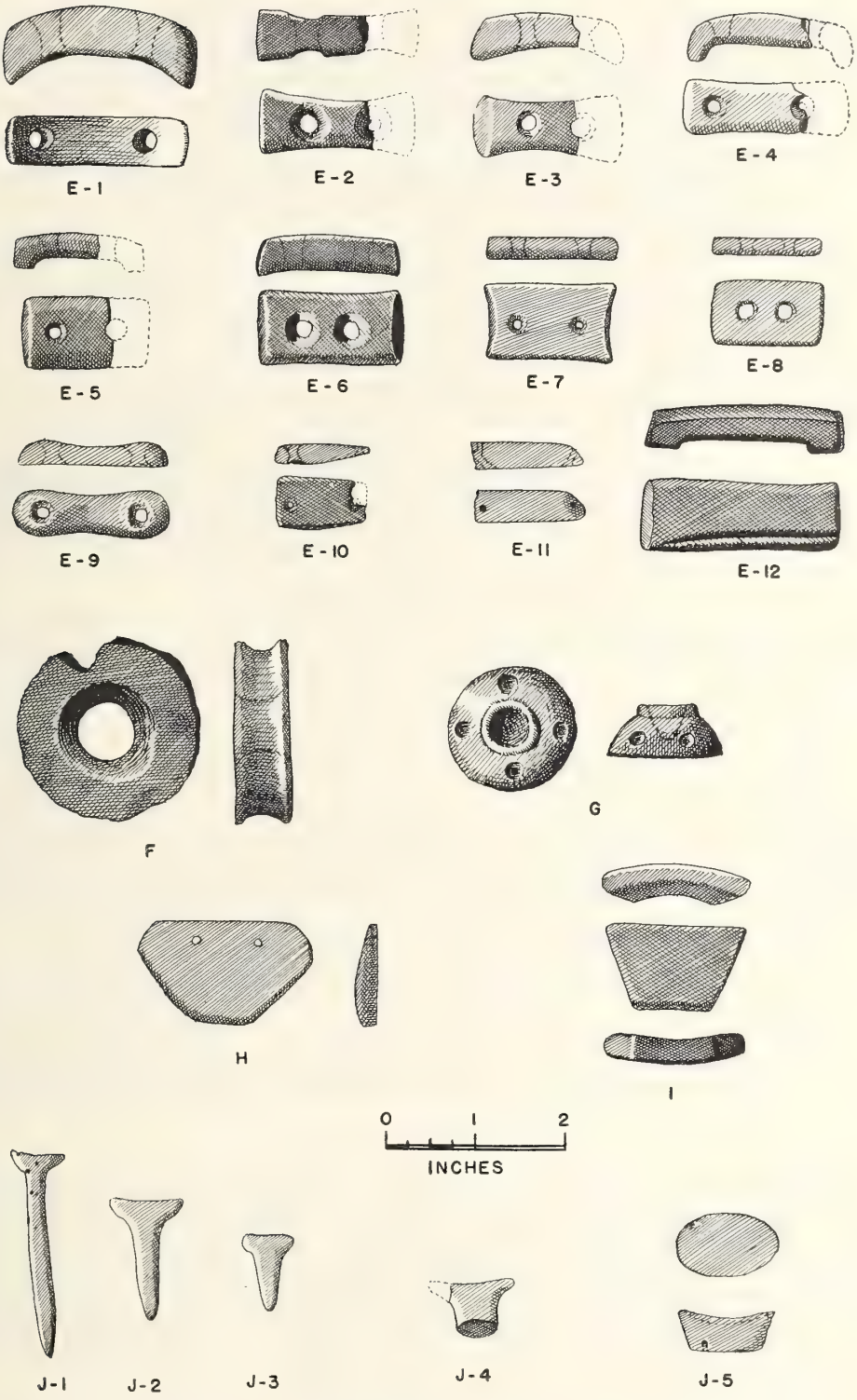

Fig. 3. Artifact types E to J. Half natural size. (Drawn by W. Duff and F. L. Beebe.)

A-1—1¼ x 1¼ x 5/16. Canal site, Spalding collection. Stone dark grey and somewhat schistose. (*See* Fig. 1.)

A-2—1 3/16 x 1 3/16 x ½. Canal site, Spalding collection. Soapstone smoothed to a black glossy sheen. Masterfully made and finished. Wear polish is evident along the corners of the deep dorsal groove and under the projections on the other side. The ridges along the groove are decorated by incised lines, one along the outer side and several across the top. (*See* Fig. 1.)

A-3—1⅛ x 1 1/16 x ca. 5/16. Canal site, Freeman collection. Soapstone smoothed to a shiny greenish black. Both projections have been broken off, and a small conical hole has been drilled through the small end. Slightly dished or hollowed along the back, like A-1.

A-4—1⅛ x 1 1/16 x ⅜. Active Pass, Barrow collection (Provincial Museum No. 5236). Dark polished soapstone. The bottom is dead flat and lacks the clasp-like projections which the others have. However, the back has a deep groove expanding toward the ends and showing wear polish, similar to that of A-2.

I know of only two artifacts which bear any resemblance to this type. One, found by C. E. Borden at his Locarno Beach site, is quite similar to A-4 in size, general shape, and material. The flared dorsal groove is present but much narrower and shallower. The bottom is flat. (Borden, personal communication.)

The other is a small ivory clasp used by the Central Eskimo for holding coiled-up harpoon-lines (*see* Boas, 1884, Fig. 394b and p. 474). Like A-1, A-2, and A-3, this clasp has opposed projections on one side. It is about 1 inch long, and was used with a strip of leather to hold a coil of line together when not in use. These Eskimo made a variety of such clasps and bestowed considerable care on them.

These Type A artifacts could have been used in some such way as clasps, but that would not explain the lack of projections on A-4 and the apparent functional purpose of the dorsal groove. Hence their use must still be regarded as unknown.

Type B (Two Specimens)

Flattened hollow cylinders about 1¼ inches long, which are oval in cross-section, constricted around the middle, and expanding in a smooth curve to the ends. One of the flattened sides is perforated; in one case by two holes, in the other by a single hole with two extensions toward the ends. They are carefully made of hard soapstone and polished to a high gloss. I know of no similar artifacts, and am unable to suggest a use for this type.

B-1—1¼ x 1 x ⅜. Canal site, Spalding collection. Black and slightly mottled, polished very smooth on the outer surfaces. The perforation consists of a circular hole with a V-shaped notch toward each end. No marked evidence of wear is apparent. (*See* Fig. 1.)

B-2—1⅜ x 1 5/16 x ⅜. Canal site, Spalding collection. Grey-green, polished. Broken. The two drilled perforations in the upper side are not completely circular at the bottom where they break through the stone, and show no marks of wear. (*See* Fig. 1.)

Type C (Eight Specimens)

Short stone bars roughly oval in cross-section, with a deep groove along the bottom which makes the cross-section C-shaped. One end is typically cut square across; the other is cut at an angle. The top often tends to be flat, or at least shows flat facets ground by abrasion in the manufacture of the object. The interior of the groove shows considerable polish, and its lower margins are sometimes worn to sharp blade-like edges (*see* C-2). Most are slightly "waisted"; that is, the ends are larger in cross-section than the middle. Only one specimen is entire; several have broken into halves along the groove. Seven are from the Canal site and one from Active Pass.

C-1—1⅜ x ⅝ x 9/16. Canal site, Spalding collection. Mottled greenish-black, showing abrasions from being ground into shape, and polished. This is the only entire specimen. Markedly waisted and larger at the square cut end.

C-2—1¼ x 1. Canal site, Freeman collection. Green-black, and highly polished. Shows typical square and sloped ends, flat facet on top, and waisting. The bottom edge is worn very sharp.

C-3—1 x ¾. Canal site, Spalding collection. Green-black, polished. This specimen shows more than the usual waisting, the top and sides being markedly concave. The flank is decorated with nine vertical incised lines, well polished.

C-4—1 x ¾. Active Pass, Mayne Island. Barrow collection (P.M. 5238). Green-black, masterfully made and highly polished. The top is flat and straight, but the side is slightly concave, expanding almost to form a collar at each end.

C-5—¾ x ½. Canal site, Spalding collection. Green-black, showing abraded facets. Atypical in being so short and having almost parallel ends. On both ends a shallow V-shaped notch is ground from the apex of the groove toward the top.

C-6—Fragment only. Canal site, Spalding collection. Green-black, polished. Flat top.

C-7—Fragment. Canal site, Spalding collection. Greenish, ground and polished. On the end a shallow notch extends upward from the apex of the large groove.

C-8—(Not illustrated.) 1⅛ x 1. Canal site, National Museum of Canada collections, No. XII-B-1793. Collected by D. Jenness from midden on passage between North and South Pender Islands, 1935. Dark, well polished. Similar to C-2 and C-4 except that both ends are cut almost square.

Again it is difficult to suggest a use. Functional features seem to be the groove, the shape of the ends, and the waisting. The groove especially shows wear as though hide strips or lines had been drawn through it, or it had been used as some sort of friction clasp to hold layers of hide together.

Type D (Five Specimens)

Small polished artifacts, three-quarters to 1⅝ inches long and one-half to three-quarters inches wide. In top elevation they are rectangular or waisted (the long sides concave), and one end is usually very slightly larger than the other. In front elevation they are flatly oval, but usually with one face flatter than the other. In cross-section they are rectangular, except in one case. Four are from the Canal site and one from Chemainus Bay.

D-1—1½ x ¾ x 5/16. Canal site, Freeman collection. Black, polished very smooth.

D-2—1⅝ x ¾ x ⅝. Canal site, Spalding collection. The dark shiny surface has eroded away except in spots, leaving a rough yellow-grey surface. Identical in shape to D-1.

D-3—1 7/16 x ⅝ x ⅜. Chemainus Bay, P.M. 1365. Light mottled stone with smooth polish. In cross-section the sides converge toward the top, which is concave. In front elevation the bottom is almost flat, and the top convex. This artifact was catalogued as a labret.

D-4—1 x 7/16 x ⅜. Canal site, Freeman collection. Black and highly polished. Differs from the others in being smaller and not waisted.

D-5—⅞ x 9/16 x ¼. Canal site, Freeman collection. Black and highly polished. Bottom flatter than top. Waisted, with one end slightly larger than other.

Again it is difficult to guess the function of these artifacts. Labrets, mesh measures, and buttons have been suggested, but none of these seems probable.

Type E (Twelve Specimens)

Generally rectangular stone tablets 1 to 2⅛ inches long and five-sixteenths to seven-eighths inches wide, often curved or with sharply down-curved ends, and with drilled perforations near the ends. The cross-section ranges from flatly oval or rectangular to almost round or square. The holes are typically biconical, drilled from both sides. Several are broken across one of the perforations. Five are from the Canal site, three from Active Pass, two from Galiano Island, and two from Saltspring Island.

E-1—2 1/16 x ⅞ x ½. Canal site, Jennens collection. Light grey, polished. Markedly curved, with downward-projecting ends and the holes slanting outward toward the top. Cross-section almost square.

E-2—ca. 1¾ x ⅝ x ½. Active Pass, Mayne Island. Barrow collection (P.M. 5237). Shiny black. Broken. Expands toward ends, which are flat. Cross-section a round-cornered square.

E-3—ca. 1⅝ x ¾ x ½. Ganges Harbour, Saltspring Island. National Museum of Canada, No. XII-B-583, collected by Dr. C. F. Newcombe in 1901. Dark, smooth. Broken. Curved. End flat and sloped. Cross-section a rounded rectangle, flatter at bottom than top.

E-4—ca. 1⅞ x ⅝ x ⅜. Active Pass, Mayne Island. Barrow collection (P.M. 5241). Soft grey soapstone. Broken. Ends definitely down-curved.

E-5—ca. 1½ x ¾ x ¼. Active Pass, Mayne Island. Barrow collection (P.M. 5239). Dark grey soapstone. Broken. Slightly curved with down-curved ends. Cross-section a flat oval with bottom flatter than top.

E-6—1$\frac{9}{16}$ x 1$\frac{3}{16}$ x ⅜. Canal site, Spalding collection. Green (like nephrite) and polished very smooth. Definitely curved, with flat ends, and rounded rectangle cross-section.

E-7—1⅜ x ⅞ x ¼. Montague Harbour, Galiano Island. Barrow collection (P.M. 5234). Smooth grey-green soapstone. Flat, with slightly concave ends, and oval in cross-section.

E-8—1¼ x 1$\frac{1}{16}$ x $\frac{3}{16}$. Canal site, Spalding collection. Atypical in being made of white crystalline limestone. Flat rectangle with rounded corners.

E-9—ca. 1¾ x ½ x ¼. From Saltspring Island. In a collection at St. Michael's School, Victoria. Grey soapstone. Atypical in its rounded shape and flat bottom.

E-10—1 x $\frac{9}{16}$ x $\frac{3}{16}$. Canal site (uncertain), Spalding collection. Smooth dark-grey soapstone.

E-11—1¼ x $\frac{5}{16}$ x ¼. Montague Harbour, Galiano Island. Barrow collection (P.M. 5232). Grey soapstone. Differs from others in shape and drilling technique. At one end slanting holes from the top and bottom meet a third hole drilled in the end (done after this end broke). At the other end a single slanting hole intersects the slope of the end.

E-12—2⅛ x ¾ x ½. Canal site, Freeman collection. In process of manufacture. Grey soapstone, unsmoothed except for one flat end, which shows typical dark smooth finish. It has been blocked out to a shape similar to E-4 and E-5, but no holes have been drilled. A saw-cut is visible along the top.

These artifacts resemble a type of ivory "cord attacher" used by the Bering Strait Eskimo and illustrated by Nelson (1896, p. 143, and Plate LVIb). It was used to attach two lengths of line together quickly. The artifact was permanently threaded on a loop at the end of one line, one arm of the loop through each hole. The other line also had a loop at the end, and this was passed through the slack end of the first loop, opened to encircle the artifact, then pulled tight.

C. E. Borden has illustrated a curved lenticular bone object with two holes drilled through it from Locarno Beach (Borden, 1951, Plate 1, 10), which could well have the same function. In addition, there is a similar bone object from the Canal site in the Freeman collection.

Type F (Two Specimens)

Stone pulley-like objects about 2 inches in diameter.

F-1—2 x ⅞. South Pender Island (inland). Spalding collection. Mottled grey stone polished very smooth, especially in the groove around the rim.

F-2—2 x ⅞. American Museum of Natural History, No. 20.1/7965, from shell-mound, Puget Sound. This specimen is similar in size and material to F-1, but has a larger central hole.

The shape is reminiscent of obsidian ear spools from Mexico and elsewhere, though these objects seem too heavy for that purpose.

Type G (One Specimen)

G—1⅜ diameter x ⅝. Canal site, Jennens collection. Light yellow stone smoothed to a high polish, especially on the circular, slightly convex bottom. A deep, bluntly conical depression is drilled into the top. Equally spaced around the shoulder are four shallow pits, each of which actually consists of two concentric round-bottomed pits.

Type H (One Specimen)

H—2 x 1⅛ x $\frac{3}{16}$. Montague Harbour, Galiano Island. Barrow collection (P.M. 5232). Green mottled serpentine. This is a beautifully finished ornament of the gorget type. Flat-backed, with two conical holes drilled through from the back.

Type I (One Specimen)

I—1⅜ x ⅞ x ¼. Canal site, Freeman collection. Greenish-black, polished very smooth. A beautifully made object, gently curved, with flat bottom and ends, and rounded top.

Type J, Labrets (Six Specimens, plus Information on Eight Others)

As mentioned above, labrets are included because of their apparent association with the soapstone complex. They have a slightly wider distribution in the area. The illustrations show only those from the Gulf Islands collections, but information on others is included below.

A variety of labret types appear in these collections, ranging from the T-shaped pin labrets and hat-shaped labrets to the elliptical type. In addition, more complex forms appear in the Lower Fraser.

J-1—2¼ x ⅝ x 3/16. P.M. 4590, from Bedwell Harbour, Pender Island (probably the Canal site). A long pin labret made of the shell of the giant rock scallop (*Hinnites multirigosus* Gale), a local shell-fish.

J-2—1¼ x ⅞ x ¼. Active Pass, Mayne Island. Barrow collection (P.M. 5233). Pin labret of dark grey soapstone. The concave side of the flange is flattened, the projecting stem is rounded in cross-section.

J-3—⅞ x ⅝ x ¼. Canal site, Spalding collection. Pin labret of dark grey soapstone.

In the Provincial Museum is another pin labret (No. 2374). It is from the Cowichan district, and is made of white crystalline limestone. It measures 1 1/16 x 7/16 x 3/16, the stem in cross-section is a rounded rectangle ¼ x 3/16, and the flange is small and straight rather than wide and curved.

J-4—ca. 1 x ⅝ x ⅜. Canal site, Spalding collection. A small hat-shaped labret of soapstone. The flange is gently curved, the projecting head short, round in section, and rather flat in front.

A similar hat-shaped soapstone labret is in the Provincial Museum (No. 3064). Its exact provenience is unknown, but it is part of a collection from the Yale area in the Fraser Valley. The flange is somewhat wider than that of J-4, being 1 3/16 x ½, and it is curved and tapered to the tips. The head is a round blunt button projecting one-quarter inch from the front of the flange.

J-5—Illustrates two labrets identical in shape and material.

(1) 1⅛ x 11/16 x ⅜. Canal site, Spalding collection. Elliptical soapstone labret with no flange. The inner surface is markedly concave. A small hole is drilled at an angle through the lower front edge, perhaps for the suspension of beads or other ornaments.

(2) 1¼ x ¾ x ½. Active Pass, Galiano Island. Barrow collection (P.M. 5506). Identical in material, shape, concavity, position of hole.

Charles E. Borden has reported and illustrated a somewhat similar labret from his Locarno Beach I period (Borden, 1950, p. 15; 1951, Plate I, 12). Made of lignite and decorated with incised crescents, it is slightly larger than J-5. Though elliptical, it differs somewhat in having a slightly enlarged curved flange on the inner side.

Harlan I. Smith illustrated two labrets—one from Hammond in the Lower Fraser and one from North Saanich. Both of these have elliptical heads and enlarged, curved flanges.

(1) ca. 2 inches wide. Port Hammond shell-mound (*see* Smith, 1903, p. 178, Fig. 44). Stone labret, elliptical head, curved and enlarged elliptical flange with slightly squared ends. Smith mentions also another stone labret from this site (*op. cit.*).

(2) ca. 1¾ inches wide. Shell-mound, North Saanich (*see* Smith, 1907, p. 350, Fig. 138b). Made of clay shale (burned?). The head is elliptical and concave in front. The flange is enlarged, curved, and tapered to the ends.

Two additional labrets of more complex shapes from the Lower Fraser should be mentioned. Both are of smooth grey-green stone and are well made and polished.

(1) In Vancouver City Museum, attributed to Marpole. This labret has a large curved flange ca. 1½ inches wide with rounded ends. The head is circular (ca. three-quarters inches diameter, 1 inch long) which would project straight downward over the chin.
(2) In the private collection of Mr. B. A. McKelvie is a labret from the Lower Fraser (Pitt Meadows). It is ca. 2 inches wide, has a large curved flange and two round heads which would project side by side through the lip.

To summarize, the archæological distribution of labrets in this area, though larger than that of the other artifacts, is limited to the Gulf Islands area (Galiano Island to North Saanich), Locarno Beach, and the Lower Fraser (at least as far up as Hammond). Of the fourteen labrets mentioned, six are from the Gulf Islands collections, four of these concentrated at the Canal site. It is interesting that all the pin labrets are from this part of the area, and that the larger and more complex forms are more often from the Mainland. This may signify only that the Mainland people made their pin (novice) labrets of less-lasting materials.

It is not possible to say whether all of these labrets are of the same approximate age. The Locarno Beach specimen is presumably about 2,500 years old, the age of the Locarno Beach I deposits according to radiocarbon dating (Borden, 1953, p. 31). The evident association of labrets with Marpole and Hammond, which are thought to be somewhat more recent sites, would seem to suggest that they continued in use over a long period. However, these associations are not certain enough to permit definite statements as yet. The variety of types does not necessarily imply a long period of use, as all of these types could well have been in use at the same time. The smaller forms, especially the pin labrets, would be used by young people when the lip was first pierced, and could be replaced by larger forms with increasing age. Sex and class differences could well explain the variety of the larger types.

In historic times, labrets were not used by the Indians of this area, although they were used by the northern coast tribes as far south as the Bella Bella, and by the Aleuts and western Eskimos. They were also used in Mexico. The historic Northwest Coast use of labrets has been considered to be a link with Eskimo culture (*see* e.g. Drucker, 1955, p. 187). Similarly, the labrets found archæologically in the region under discussion are also thought to indicate relationship to early Eskimo cultures (*see* e.g. Borden, 1951, p. 45). The apparent association of our soapstone complex with labrets, therefore, makes it seem possible that it, too, is related to early Eskimo cultures.

SUMMARY

These unique soapstone artifacts pose intriguing problems. First, we are unable to ascribe uses to most of the types. Does this mean that the Gulf Islanders of that time had a unique culture, or is it that they found Fraser River soapstone to be a suitable material for artifacts which other groups made of more perishable materials? The evidence seems to indicate that except for these artifacts their culture was not unlike other early cultures of the area.

The few clues we have of outside relationships seem to suggest possible ties with the early Locarno Beach culture and with Eskimo cultures. Present at Locarno Beach are the artifact similar to A-4, the elliptical labret, and the possible cord attacher of bone like one from the Canal site and probably related to our Type E artifacts. The Locarno Beach culture was an early maritime culture which is regarded as having some close relationship to early Eskimo cultures.

The possibility that our Type E artifacts are cord attachers of a type used by Eskimo sea-mammal hunters, the association with labrets, and the impression that the fine craftsmanship involved finds its closest parallel in Eskimo artifacts are other indications of some tie between our soapstone artifacts and Eskimo culture. But these are only vague indications, not proof. Until excavation reveals the cultural context and relationships of this soapstone complex, it must remain an unexplained and provocative puzzle.

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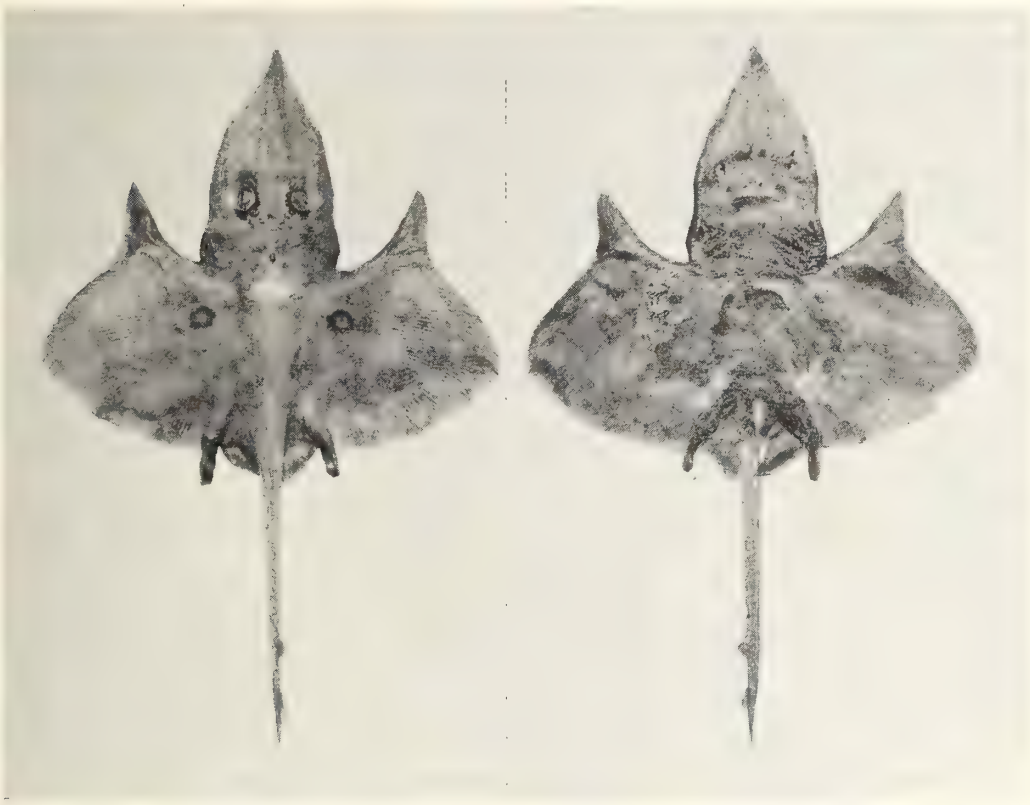
AN ABNORMAL LONG-NOSED SKATE (*RAJA RHINA*) FROM BRITISH COLUMBIA

By W. E. Barraclough, Pacific Biological Station, Nanaimo, B.C.

An abnormal long-nosed skate (*Raja rhina*) was recovered by the otter trawler "Investigator No. 1"* which was fishing at a depth of 40 fathoms in Stuart Channel on the east coast of Vancouver Island on November 16th, 1951. It readily attracted attention by its peculiar shape. The pectoral fins of this specimen, an immature male 230 mm. long, instead of being joined to the head region, projected forward freely on either side of the snout (*see* illustration).



Dorsal and ventral view of an abnormal long-nosed skate (*Raja rhina*).

Originally the descriptions of the genera *Cephaleutherus* (Rafinesque, 1810), *Propterygia* (Otto, 1821), and *Hieroptera* (Fleming, 1841) were based on teratologic specimens of rays and skates. It was first concluded by Gill (1895) that the abnormalities were conditioned by an arrested development in the forward growth of the pectoral fins and, consequently, in their continuity with the head.

Various degrees in the malformation or anterior prolongation of the pectoral fins have been illustrated and described. Dean (1923) credits Gesner (1556) with the first known account and figure of abnormal development of this type. The specimen illustrated by Traquair (1892) shows only a slight abnormal modification of the pectoral fins. Legendre (1935) shows photographs of arrested development of the pectoral fins

* The "Investigator No. 1" is the research otter trawler at the Pacific Biological Station.

in *Raia brachyura,* which is very similar to the specimen of *Raja rhina* illustrated here. He cites many early references of abnormalities in rays and other elasmobranchs.

Williamson (1911) claimed that these abnormalities are the result of cutting by fishermen and advances reasons to suggest the possibility. Although fishermen will sometimes mutilate skates and dogfish in order to free the fish-hooks, it is unlikely that individuals with major abnormalities can be attributed to this form of mutilation, particularly symmetrical malformation of young individuals. Johnson (1905) suggests that the malformations are more nearly related to the primitive position of the elasmobranch pectoral-fin structures than to the position which the fins normally occupy in skates and rays.

The illustrations and description of the embryonic development of the skate *Raia brachyura* by Clark (1927) shows that the union of snout and pectorals is not complete until 111 days after fertilization of the egg. This irregular non-adherence of the pectoral fins to the head seems to be caused, as also suggested by Legendre, by stoppage of the growth processes producing this union and by independent extension of the pectorals in the region of the head.

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